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AD905017
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AUTHORITY
usnwc ltr, 30 aug 1974

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AD905017

Cylinder Expansion (Gurney Constant) and Warhead Fragmentation

Part 2. Computerized Data Reduction

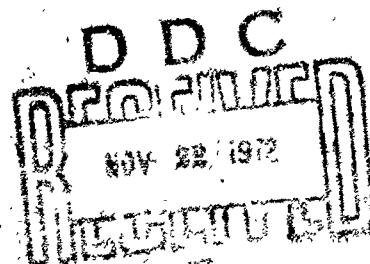
by

Richard A. Plaxson

and

Charles T. Mitchell

Propulsion Development Department



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ABSTRACT

Development of a cylinder expansion test for use in assessing the metal acceleration capability of explosives is discussed in Part 1 of this report. A precisely manufactured metal cylinder is filled with explosive, and its wall expansion during detonation is observed with a streak camera. The photographic record of the cylinder expansion is analyzed by mechanized film reading and high speed computer techniques. The maximum velocity attained by the wall fragments is taken as a measure of the momentum imparted to the metal by the explosive. Both manual and automated methods of data reduction for attainment of test results are given. When standardized, this test procedure will permit the correlation of the evaluations of explosive compounds between laboratories. Part 2 of this report covers the computerized reduction of the pictorial data to tabular listings and graphic displays.

NWC Technical Publication 5240, Part 2

Published by Propulsion Development Department
Collation Cover, 35 leaves, DD Form 1473, abstract cards
First printing 260 unnumbered copies
Security classification UNCLASSIFIED

Naval Weapons Center

AN ACTIVITY OF THE NAVAL MATERIAL COMMAND

W. J. Moran, RADM, USN Commander

H. G. Wilson Technical Director

FOREWORD

This report describes the development of a cylinder expansion test used in assessing the metal acceleration capability of explosives. Two methods, manual and automated, for the translation of the photographic recordings are presented. The techniques described were developed by the Explosives Research Branch (Code 4541) at the Naval Weapons Center (NWC), China Lake, California. This work was performed during fiscal years 1968-71 under Task Assignment AirTask A350 350D/216B/2 F17-353-501.

This report is presented in two parts. Part 1 contains a description of the test program and Part 2 a complete listing of the tabulated, reduced data. Distribution of Part 2 has been limited to those facilities or individuals known to be engaged in explosive testing technology or applications thereof. Others may obtain copies of Part 2 by requesting from the Defense Documentation Center.

The material in this report has been reviewed for technical accuracy by C. D. Lind (Code 4541). This report is presented for use at the working level and does not necessarily reflect the official view or final judgment of NWC.

Released by
R. REED, Head
*Applied Research and
Processing Division*
1 September 1972

Under authority of
G. W. LEONARD, Head
Propulsion Development Department

INTRODUCTION

The analytical processes used in the cylinder expansion test program (described in Part 1) were extremely tedious and allowed several areas of possible errors. Serious consideration was given to automating the data reduction procedures. As a result, Control Data Corporation (CDC), Ridgecrest, California, was given the responsibility of designing a computerized system of reducing the film data and information sheets into printouts and graphic presentations. The resulting CYLEX program was devised by Joseph Nemcek of CDC.

THE CYLEX PROGRAM

The CYLEX program consists of a main line (CYLEX), two data manipulation subroutines (TEMP2, TEMP3), and three special purpose subroutines (POINTR, ORTHLS, COEFS). CYLEX is the name of the main line program which initiates the data processing. In CYLEX the plot array is established and the common areas filled. CYLEX reads the raw data cards and fills the X and Y arrays which are then fitted to a curve by means of an orthogonal least squares fit of order specified by the user.

TEMP2 is the tabulation computation subroutine called by CYLEX. TEMP2 creates the values for the variables TJ, RJ, TDJ, R_j' , V_j' , Alpha' , RINJ' , and VOLJ'/VOLD . These values are then printed in tabular form by the printer and/or the plotter, based on a user declared option. TEMP2 also calculates the above variables at the points 5, 10, 15, 19, 26, 32 mm from the Y_0 radius point. The specified point values that fall within the limits of the data fitted in CYLEX are printed at the end of the table output and at the completion of an entire run the average of the top and bottom values, if available, are printed at the end of the tabular list.

TEMP3 is the subroutine to do the plotting. Entry is from TEMP2 based on a check of user specified plot options. If any plots are requested, TEMP3 is called, otherwise control is returned from TEMP2 to CYLEX. Five different graphs may be produced in TEMP3:

V_j' vs TJ

$R_j - R_0$ vs TJ

$R - R_0$ vs TJ

Alpha_j' (Alpha' in tabular printout) vs RJ'

R_j vs TJxD (TDJ in tabular printout)

PART 2

Each of the graphs has a fixed ordinate scale and an abscissa scale that is thirty units long. Since each graph may extend over more than one page, the abscissa scale limits are variable from -99 to +999 with the first graph of a series having as smallest abscissa value an integral ten below the least abscissa data value.

TEMP3 also contains a checking section that will mark, on demand, the points on the graphs equivalent to the values calculated at the 5, 10, 15, 19, 26, and 32 mm points.

After completion of all requested plots, a "walk back" to CYLEX occurs.

POINTR is a special purpose routine to draw either an arrow or a triangle on the plotter at any specific X, Y location. The arrow is 80 x 20 rosters and the triangle 40 x 20 rosters. The specified X, Y location is the point of the arrow or the apex of the equal sides of the isosceles triangle. The symbol is orientable in 360 degrees with 0° when the arrow is vertical and increasing degrees running counter clockwise.

ORTHLS is the math pack orthogonal polynomial routine and finds the parameters of the least squares polynomial which best approximates a weighted set of points using orthogonal polynomials.

COEFS is the math pack routine to create a set of coefficients of the least squares polynomial which best approximates a weighted set of data points using the orthogonality parameters created by ORTHLS.

In the program is a table called POINTS set with values of the six known points from which the "Top" and "Bottom" lines are written. This table also is used for directing the drawing of the plot arrows. Organization of table is as below:

	1	2	3	4	5	6	7	8	9
	H	T	YA	Alpha	R	TD	VP	RP	Distance
1									5
2									10
3									15
4									19
5									26
6									32

PAGE 1

EXPERIMENT NUMBER R-17.
NWC CODE 4501 CYLEX

FIRING DATE 8 JANUARY 1968.
MAGNIFICATION = .9960
OUTSIDE RADIUS = 15.31MM

FIRING BY C. T. MITCHELL.
WRITING RATE = 1.497(MM/USEC)
INSIDE RADIUS = 12.70MM

D = 7.697 MM/USECS

C/M = .4193

RHOC = 1.7006/CC

EXPLOSIVE PBXM-101

RHOM = 8.9606/CC

METAL CUI(OFHC)

TI (USECS)	RI (MM)	TJ (USEC)	RJ (MM)	TOP (MM)	RJ* (MM)	VJ* (MM/USEC)	ALPHA* (MM/USEC)	RINJ* (MM)	VOLJ*/VOLO
.00000	15.30600								
.00040	15.43251								
.00080	15.56352								
.00120	15.68407								
.00160	15.80479								
.00200	16.00479								
.00240	16.18652								
.00280	16.34114								
.00320	16.50074								
.00360	16.67748								
.00400	16.86323								
.00440	17.03893								
.00480	17.22969								
.00520	17.41041								
.00560	17.61624								
.00600	17.83411								
.00640	18.05700								
.00680	18.30399								
.00720	18.54696								
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.00800	19.04696								
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.00920	19.79796								
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.01040	20.57406								
.01080	20.83519								
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.01200	21.61693								
.01240	21.87727								
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.01360	22.65836								
.01400	22.91870								
.01440	23.17904								
.01480	23.43938								
.01520	23.69972								
.01560	23.96006								
.01600	24.22040								
.01640	24.48074								
.01680	24.74108								
.01720	25.00142								
.01760	25.26176								
.01800	25.52210								
.01840	25.78244								
.01880	26.04278								
.01920	26.30312								
.01960	26.56346								
.02000	26.82380								
.02040	27.08414								
.02080	27.34448								
.02120	27.60482								
.02160	27.86516								
.02200	28.12550								
.02240	28.38584								
.02280	28.64618								
.02320	28.90652								
.02360	29.16686								
.02400	29.42720								
.02440	29.68754								
.02480	29.94788								
.02520	30.20822								
.02560	30.46856								
.02600	30.72890								
.02640	30.98924								
.02680	31.24958								
.02720	31.50992								
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.03440	36.19604								
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.05320	48.43202								
.05360	48.69236								
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.05480	49.47338								
.05520	49.73372								
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.05880	52.07678								
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.06160	53.89916								
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.06240	54.41984								
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.06560	56.50256								
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.06880	58.58528								
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.07280	61.18868								
.07320	61.44902								
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NWC TP 5240
PART 2

TI (USECS)	RI (MM)	TJ (USECS)	RJ (MM)	TOP TDJ (MM)	RJ (MM)	VJ (MM/USECS)	ALPHA (MM/USECS)	RINJ (MM)	PAGE 2 VOLJ/VOL0
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7.81563	24.48068	7.81563	24.48068	60.15691	24.46935	1.43273	2.44385	22.92957	3.25975
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9.01804	26.20980	9.01804	26.20980	69.41182	26.21335	1.46671	2.50230	24.78208	3.80774
9.21844	26.52486	9.21844	26.52486	70.95431	26.50787	1.47165	2.51080	25.09329	3.90398
9.41884	26.80799	9.41884	26.80799	72.49679	26.80307	1.47628	2.51895	25.40514	4.00162
9.61924	27.10116	9.61924	27.10116	74.03928	27.09940	1.48090	2.52673	25.71757	4.10005
9.81964	27.40337	9.81964	27.40337	75.58176	27.39661	1.48522	2.53416	26.03057	4.20107
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10.22044	27.98068	10.22044	27.98068	78.66673	27.99352	1.49323	2.54798	26.65808	4.40606
10.42084	28.28791	10.42084	28.28791	80.20922	28.29314	1.49693	2.55432	26.97254	4.51062
10.62124	28.59212	10.62124	28.59212	81.75170	28.59348	1.50042	2.56033	27.28742	4.61658
10.82164	28.88831	10.82164	28.88831	83.29419	28.89449	1.50370	2.56598	27.60208	4.72384
11.02204	29.19152	11.02204	29.19152	84.83667	29.19615	1.50677	2.57127	27.91850	4.83248
11.22244	29.50076	11.22244	29.50076	86.37916	29.49840	1.50984	2.57621	28.23423	4.94247
11.42285	29.79895	11.42285	29.79895	87.92164	29.80120	1.51230	2.58079	28.55044	5.05390
11.62325	30.11022	11.62325	30.11022	89.46413	30.10452	1.51475	2.58502	28.86890	5.16648
11.82365	30.40136	11.82365	30.40136	91.00661	30.40830	1.51700	2.58888	29.18358	5.28043
12.02405	30.69152	12.02405	30.69152	92.54910	30.71252	1.51904	2.59240	29.50042	5.39572
12.22445	31.02284	12.22445	31.02284	94.09158	31.01712	1.52087	2.59553	29.81741	5.51230
12.42525	31.33007	12.42525	31.33007	95.63406	31.32207	1.52249	2.59835	30.13461	5.63018
12.62565	31.62726	12.62565	31.62726	97.17655	31.62723	1.52391	2.60079	30.45187	5.74930
12.82585	31.92545	12.82585	31.92545	98.71904	31.93284	1.52512	2.60288	30.76808	5.86959
13.02605	32.22565	13.02605	32.22565	100.26152	32.23858	1.52613	2.60460	31.08605	5.99134
13.22645	32.54091	13.22645	32.54091	101.80401	32.54450	1.52692	2.60598	31.40320	6.11421
13.42685	32.84914	13.42685	32.84914	103.34649	32.85056	1.52751	2.60699	31.72027	6.23830
13.62725	33.16240	13.62725	33.16240	104.88898	33.15672	1.52789	2.60765	32.03723	6.36380
13.82765	33.46460	13.82765	33.46460	106.43146	33.46293	1.52807	2.60795	32.35404	6.49007
14.02805	33.75175	14.02805	33.75175	107.97394	33.76916	1.52804	2.60789	32.67068	6.61772
14.22845	34.07304	14.22845	34.07304	109.51643	34.07536	1.52780	2.60748	32.98708	6.74652
14.42885	34.38529	14.42885	34.38529	111.05892	34.38149	1.52736	2.60671	33.30320	6.87645
14.62926	34.69753	14.62926	34.69753	112.60140	34.68781	1.52670	2.60559	33.61903	7.00750
14.82966	35.00677	14.82966	35.00677	114.14389	34.99337	1.52583	2.60410	33.93453	7.13964
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15.23046	35.62926								
15.43086	35.92745								
15.63126	36.23167								
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16.23246	37.17444								
16.43287	37.49472								
16.63327	37.79994								

[illegible]

PAGE 1

EXPERIMENT NUMBER R-17.
NWC CODE 4641 CYLEX

FIRING DATE 8 JANUARY 1968.
MAGNIFICATION = .9960
OUTSIDE RADIUS = 16.31MM

FIRING BY C. C. MITCHELL.
WRITING RATE = 1.497(NM/USEC)
INSIDE RADIUS = 12.70MM

C/M = .4193 D = 7.697 MM/USECS

METAL CU(OPHC) RHOM = 8.9800/CG EXPLOSIVE PBXN-101 RHOC = 1.7000/CG

T1 (USECS)	R1 (MM)	TJ (USECS)	RJ (MM)	BOTTOM TDJ (MM)	RJ (MM)	VJ (NM/USEC)	ALPHA (NM/USEC)	RINJ (MM)	VOLJ (VOLO)
-00000	16.30600	2.20641	18.32106	24.67976	18.29791	1.32489	2.08698	16.18116	1.62335
-20040	16.43251	3.40681	18.56603	26.22224	18.54443	1.23536	2.10493	16.45041	1.67968
-40080	15.65640	3.60721	18.81704	27.76473	18.79303	1.24565	2.12257	16.73901	1.73721
-60120	15.87629	3.80762	19.04495	29.30721	19.04368	1.25575	2.13989	17.01993	1.79601
-80160	16.05901	4.00802	19.27487	30.84970	19.29632	1.26566	2.15690	17.30215	1.85608
1.00200	16.24275	4.20842	19.53390	32.39218	19.55094	1.27539	2.17359	17.58567	1.91739
1.20240	16.40941	4.40882	19.78792	33.93467	19.80749	1.28494	2.18998	17.87045	1.97999
1.40281	16.54696	4.60922	20.05398	35.47715	20.06593	1.29429	2.20602	18.15649	2.04388
1.60321	16.72668	4.80962	20.31804	37.01964	20.32623	1.30347	2.22177	18.43376	2.10907
1.80361	16.89234	5.01002	20.57608	38.56212	20.58835	1.31246	2.23719	18.73224	2.17558
2.00401	17.05499	5.21042	20.85117	40.10461	20.85226	1.32126	2.25230	19.02191	2.24337
2.20441	17.28680	5.41082	21.12226	41.64709	21.11790	1.32988	2.26710	19.31275	2.31249
2.40481	17.42146	5.61122	21.37025	43.18958	21.38526	1.33831	2.28158	19.60474	2.38295
2.60521	17.62732	5.81162	21.64936	44.73206	21.65429	1.34655	2.29574	19.89785	2.45474
2.80561	17.85620	6.01202	21.90840	46.27455	21.92495	1.35462	2.30959	20.19207	2.52787
3.00601	18.06804	6.21242	22.19956	47.81703	22.19721	1.36249	2.32311	20.48737	2.60235
3.20641	18.32106	6.41283	22.46964	49.35952	22.47103	1.37018	2.33633	20.78373	2.67818
3.40681	18.56603	6.61323	22.72868	50.90200	22.74637	1.37769	2.34922	21.08112	2.75537
3.60721	18.81704	6.81363	22.92787	52.44449	23.02319	1.38501	2.36180	21.37952	2.83392
3.80762	19.04495	7.01403	23.31804	53.98697	23.30147	1.39214	2.37406	21.67890	2.91385

TI (USECS)	RI (MH)	TJ (USEC)	RJ (MH)	TOJ (MH)	RJ* (MH)	VJ* (MH/USEC)	ALPHA* (MH/USEC)	RINJ* (MH)	VOLJ*/VOLO	PAGE 2
7.21443	23.59012	7.21443	23.59012	55.52946	23.58115	1.39909	2.38600	21.97924	2.99515	
7.41493	23.46221	7.41493	23.46221	57.07194	23.10221	1.40585	2.39763	22.28052	3.07782	
7.61523	24.15739	7.61523	24.15739	50.61443	24.14461	1.41243	2.40894	22.58270	3.16187	
7.81563	24.41643	7.81563	24.41643	60.15691	24.42430	1.41882	2.41993	22.88577	3.24731	
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8.61723	25.54811	8.61723	25.54811	66.32635	25.57534	1.44254	2.46071	24.10631	3.60292	
8.81764	25.81926	8.81764	25.81926	67.86974	25.86497	1.44800	2.47011	24.41338	3.69529	
9.01804	26.09041	9.01804	26.09041	69.41182	26.15564	1.45324	2.47920	24.72117	3.78905	
9.21844	26.36156	9.21844	26.36156	70.95431	26.44784	1.45837	2.48756	25.02965	3.88420	
9.41884	26.63271	9.41884	26.63271	72.49679	26.74019	1.46328	2.49641	25.33879	3.98074	
9.61924	26.90386	9.61924	26.90386	74.03928	27.03251	1.46801	2.50454	25.64856	4.07867	
9.81964	27.17501	9.81964	27.17501	75.58176	27.32486	1.47254	2.51235	25.95834	4.17798	
10.02004	27.44616	10.02004	27.44616	77.12425	27.61720	1.47690	2.51984	26.26889	4.27867	
10.22044	27.71731	10.22044	27.71731	78.66673	27.90954	1.48106	2.52701	26.58139	4.38074	
10.42084	27.98846	10.42084	27.98846	80.21517	28.20189	1.48505	2.53386	26.89340	4.48419	
10.62124	28.25961	10.62124	28.25961	81.76410	28.49424	1.48884	2.54040	27.20590	4.58901	
10.82164	28.53076	10.82164	28.53076	83.31303	28.78658	1.49245	2.54662	27.51885	4.69519	
11.02204	28.80191	11.02204	28.80191	84.86196	29.07892	1.49588	2.55251	27.83223	4.80273	
11.22244	29.07306	11.22244	29.07306	86.41089	29.37126	1.49912	2.55809	28.14600	4.91163	
11.42284	29.34421	11.42284	29.34421	87.95982	29.66360	1.50217	2.56335	28.46013	5.02188	
11.62324	29.61536	11.62324	29.61536	89.50875	29.95594	1.50512	2.56829	28.77460	5.13347	
11.82364	29.88651	11.82364	29.88651	91.05768	30.24828	1.50773	2.57291	29.08937	5.24640	
12.02404	30.15766	12.02404	30.15766	92.60661	30.54062	1.51022	2.57722	29.40441	5.36065	
12.22444	30.42881	12.22444	30.42881	94.15554	30.83296	1.51254	2.58120	29.71969	5.47622	
12.42484	30.69996	12.42484	30.69996	95.70447	31.12530	1.51467	2.58486	30.03518	5.59310	
12.62524	30.97111	12.62524	30.97111	97.25340	31.41764	1.51661	2.58821	30.35084	5.71129	
12.82564	31.24226	12.82564	31.24226	98.80233	31.71000	1.51836	2.59123	30.66665	5.83076	
13.02604	31.51341	13.02604	31.51341	100.35126	32.00234	1.51994	2.59394	30.98256	5.95151	
13.22644	31.78456	13.22644	31.78456	101.90019	32.29468	1.52137	2.59633	31.29856	6.07353	
13.42684	32.05571	13.42684	32.05571	103.44912	32.58702	1.52252	2.59840	31.61461	6.19681	
13.62724	32.32686	13.62724	32.32686	105.00005	32.87936	1.52354	2.60014	31.93067	6.32133	
13.82764	32.59801	13.82764	32.59801	106.55098	33.17170	1.52437	2.60157	32.24674	6.44708	
14.02804	32.86916	14.02804	32.86916	108.10191	33.46404	1.52501	2.60268	32.56270	6.57406	
14.22844	33.14031	14.22844	33.14031	109.65284	33.75638	1.52547	2.60347	32.87861	6.70223	
14.42884	33.41146	14.42884	33.41146	111.20377	34.04872	1.52574	2.60394	33.19440	6.83160	
14.62924	33.68261	14.62924	33.68261	112.75470	34.34106	1.52583	2.60409	33.51005	6.96214	
14.82964	33.95376	14.82964	33.95376	114.30563	34.63340	1.52573	2.60393	33.82551	7.09384	
15.03004	34.22491	15.03004	34.22491	115.85656	34.92574	1.52545	2.60344	34.14075	7.22668	
15.23044	34.49606	15.23044	34.49606							
15.43084	34.76721	15.43084	34.76721							
15.63124	35.03836	15.63124	35.03836							
15.83164	35.30951	15.83164	35.30951							
16.03204	35.58066	16.03204	35.58066							
16.23244	35.85181	16.23244	35.85181							
16.43284	36.12296	16.43284	36.12296							
16.63324	36.39411	16.63324	36.39411							

PAGE 3

TI (USECS)	RI (MM)	TJ (USEC)	RJ (MM)	BOTTOM TDJ (MM)	RJ (MM)	VJ (MM/USEC)	ALPHA (MM/USEC)	RINJ (MM)	VOLJ °/VOLO
16.83367	37.97865								
17.03407	38.29793								
17.23447	38.62122								
17.43487	38.93749								
17.63527	39.24773								
17.83567	39.57202								
18.03607	39.90034								
18.23647	40.20154								
18.43687	40.52885								
18.63727	40.83507								
18.83767	41.15134								
19.03808	41.49672								
19.23848	41.79090								
19.43888	42.09612								
19.63928	42.41640								
19.83968	42.74571								
20.04008	43.07101								
20.24048	43.38728								
20.44088	43.67945								
20.64128	44.01579								
20.84168	44.28586								
BOTTOM VALUES AT 5. MM									
		4.79044	20.30600	36.47234	20.30130	1.30260	2.22028		
BOTTOM VALUES AT 10. MM									
		8.43274	25.30600	64.90684	25.30968	1.43734	2.45170		
BOTTOM VALUES AT 15. MM									
		11.81444	30.30600	90.43604	30.30408	1.50761	2.57271		
BOTTOM VALUES AT 19. MM									
		14.44908	34.30600	111.71454	34.30096	1.52576	2.60397		
AVERAGE VALUES AT 5. MM									
		4.79034	20.30600	36.47124	20.30167	1.30842	2.23027		
AVERAGE VALUES AT 10. MM									
		8.41556	25.30600	64.77455	25.30955	1.44373	2.46278		
AVERAGE VALUES AT 15. MM									
		11.78464	30.30600	90.70639	30.30399	1.51193	2.58015		
AVERAGE VALUES AT 19. MM									
		14.41495	34.30600	110.95186	34.30754	1.52662	2.60545		

CUSTOMER NAME.

Page 1 - 2

$$Z = TW\phi \quad Z = \text{ALPNA} \cdot Z$$

10 ONE I= ALPHA i

$0 = \text{ZERO} \quad \phi = \text{ALPHA } 0$

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LOWEST SMOOTHED DATA VALUE	HIGHEST SMOOTHED DATA VALUE	ORDER OF CURVE FIT
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ச.நா.ப.	ம.ந.	ச.நா.ப.	ம.ந.
1	23	45	78
2	34	56	89
3	45	67	90
4	56	78	01
5	67	89	12
6	78	90	23
7	89	01	34
8	90	12	45
9	01	23	56
10	12	34	67
11	23	45	78
12	34	56	89
13	45	67	90
14	56	78	01
15	67	89	12
16	78	90	23
17	89	01	34
18	90	12	45
19	01	23	56
20	12	34	67
21	23	45	78
22	34	56	89
23	45	67	90
24	56	78	01
25	67	89	12
26	78	90	23
27	89	01	34
28	90	12	45
29	01	23	56
30	12	34	67
31	23	45	78
32	34	56	89
33	45	67	90
34	56	78	01
35	67	89	12
36	78	90	23
37	89	01	34
38	90	12	45
39	01	23	56
40	12	34	67
41	23	45	78
42	34	56	89
43	45	67	90
44	56	78	01
45	67	89	12
46	78	90	23
47	89	01	34
48	90	12	45
49	01	23	56
50	12	34	67
51	23	45	78
52	34	56	89
53	45	67	90
54	56	78	01
55	67	89	12
56	78	90	23
57	89	01	34
58	90	12	45
59	01	23	56
60	12	34	67
61	23	45	78
62	34	56	89
63	45	67	90
64	56	78	01
65	67	89	12
66	78	90	23
67	89	01	34
68	90	12	45
69	01	23	56
70	12	34	67
71	23	45	78
72	34	56	89
73	45	67	90
74	56	78	01
75	67	89	12
76	78	90	23
77	89	01	34
78	90	12	45
79	01	23	56
80	12	34	67
81	23	45	78
82	34	56	89
83	45	67	90
84	56	78	01
85	67	89	12
86	78	90	23
87	89	01	34
88	90	12	45
89	01	23	56
90	12	34	67
91	23	45	78
92	34	56	89
93	45	67	90
94	56	78	01
95	67	89	12
96	78	90	23
97	89	01	34
98	90	12	45
99	01	23	56
100	12	34	67

EXPERIMENT NUMBER (ZEN)	FIRING DATE (IDAT)	FIRE BY (INAM)
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REMARKS CARD - ONE, 80 Characters & Free Form	
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REMARKS CARD-TWO, 60 Characters & free form																																																											
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METAL (ZINC)		RMS (RMS)	EXPLOSIVE (ZINC)	RMS (RMS)	EXPLOSIVE (ZINC)
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WRITING RATE		INSIDE RADIIUS	OUTSIDE RADIIUS	DISTINATION	VELOCITY
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R-17. 8 JANUARY 1968.
NWC CODE 4541 CYLEX

C. T. MITCHELL.

CUZOFMCC	1.497	12.7	9.56	12.306	1.700	1.700
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1	1	005	003	2	17 4	14000 30484
1	1	007	005	2	17 4	21000 30483
1	1	009	007	2	17 4	28000 30492
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1	1	013	011	2	17 1	28300 00126
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1	1	017	015	2	17 1	28900 00516
1	1	019	017	2	17 1	29200 00696
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1	1	025	023	2	17 1	30100 01190
1	1	027	025	2	17 1	30400 01366
1	1	029	027	2	17 1	30700 01551
1	1	031	029	2	17 1	31000 01726
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1	1	035	033	2	17 1	31600 02096
1	1	037	035	2	17 1	31900 02301
1	1	039	037	2	17 1	32200 02518
1	1	041	039	2	17 1	32500 02740
1	1	043	041	2	17 1	32800 02986
1	1	045	043	2	17 1	33100 03228
1	1	047	045	2	17 1	33400 03476
1	1	049	047	2	17 1	33700 03726
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1	1	055	053	2	17 1	34600 04474
1	1	057	055	2	17 1	34900 04735
1	1	059	057	2	17 1	35200 04980
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1	1	065	063	2	17 1	36100 05787
1	1	067	065	2	17 1	36400 06076
1	1	069	067	2	17 1	36700 06335
1	1	071	069	2	17 1	37000 06604
1	1	073	071	2	17 1	37300 06868
1	1	075	073	2	17 1	37600 07143
1	1	077	075	2	17 1	37900 07429
1	1	079	077	2	17 1	38200 07712
1	1	081	079	2	17 1	38500 07992
1	1	083	081	2	17 1	38800 08270
1	1	085	083	2	17 1	39100 08562
1	1	087	085	2	17 1	39400 08845
1	1	089	087	2	17 1	39700 09138
1	1	091	089	2	17 1	40000 09430
1	1	093	091	2	17 1	40300 09719
1	1	095	093	2	17 1	40600 09999
1	1	097	095	2	17 1	40900 10292

NWC TP 5240
PART 2

044	3	17 1	41200 10580
045	3	17 1	41500 10860
046	3	17 1	41800 11174
047	3	17 1	42100 11456
048	3	17 1	42400 11748
049	3	17 1	42700 12049
050	3	17 1	43000 12330
051	3	17 1	43300 12624
052	3	17 1	43600 12930
053	3	17 1	43900 13233
054	3	17 1	44200 13528
055	3	17 1	44500 13830
056	3	17 1	44800 14138
057	3	17 1	45100 14435
058	3	17 1	45400 14751
059	3	17 1	45700 15035
060	3	17 1	46000 15324
061	3	17 1	46300 15654
062	3	17 1	46600 15960
063	3	17 1	46900 16256
064	3	17 1	47200 16553
065	3	17 1	47500 16852
066	3	17 1	47800 17166
067	3	17 1	48100 17473
068	3	17 1	48400 17785
069	3	17 1	48700 18086
070	3	17 1	49000 18372
071	3	17 1	49300 18692
072	3	17 1	49600 19003
073	3	17 1	49900 19314
074	3	17 1	50200 19622
075	3	17 1	50500 19936
076	3	17 1	50800 20242
077	3	17 1	51100 20530
078	3	17 1	51400 20842
079	3	17 1	51700 21149
080	3	17 1	52000 21477
081	3	17 1	52300 21781
082	3	17 1	52600 22100
083	3	17 1	52900 22404
084	3	17 1	53200 22715
085	3	17 1	53500 23029
086	3	17 1	53800 23345
087	3	17 1	54100 23666
088	3	17 1	54400 23969
089	3	17 1	54700 24275
090	3	17 1	55000 24592
091	3	17 1	55300 24900
092	3	17 1	55600 25228
093	3	17 1	55900 25540
094	3	17 1	56200 25870
095	3	17 1	56500 26185
096	3	17 1	56800 26527
097	3	17 1	57100 26807
098	3	17 1	57400 27135
099	3	17 1	57700 27448
100	3	17 1	58000 27766
101	3	17 1	58308 28091

102	3	17	58900-28904
103	3	17	58900-28714
104	3	17	59200-29027
105	3	17	59500-29340
106	3	17	59800-29648
107	3	17	60100-29976
108	3	17	60400-30314
109	3	17	60700-30625
110	3	17	61000-30950
111	3	17	61300-31271
112	3	17	61600-31612
113	3	17	61900-31928
000	3	17	28000-00000
001	3	17	28300-00126
002	3	17	28600-00349
003	3	17	28900-00570
004	3	17	29200-00750
005	3	17	29500-00933
006	3	17	29800-01099
007	3	17	30100-01236
008	3	17	30400-01415
009	3	17	30700-01580
010	3	17	31000-01742
011	3	17	31300-01943
012	3	17	31600-02107
013	3	17	31900-02322
014	3	17	32200-02540
015	3	17	32500-02751
016	3	17	32800-03003
017	3	17	33100-03247
018	3	17	33400-03497
019	3	17	33700-03724
020	3	17	34000-03953
021	3	17	34300-04211
022	3	17	34600-04454
023	3	17	34900-04729
024	3	17	35200-04992
025	3	17	35500-05251
026	3	17	35800-05523
027	3	17	36100-05793
028	3	17	36400-06040
029	3	17	36700-06314
030	3	17	37000-06576
031	3	17	37300-06866
032	3	17	37600-07135
033	3	17	37900-07393
034	3	17	38200-07691
035	3	17	38500-07980
036	3	17	38800-08251
037	3	17	39100-08522
038	3	17	39400-08816
039	3	17	39700-09074
040	3	17	40000-09369
041	3	17	40300-09665
042	3	17	40600-09971
043	3	17	40900-10241
044	3	17	41200-10526
045	3	17	41500-10814

NWC TP 5240
PART 2

41800-11115	17 2	096	1
42100-11387	17 2	097	1
42400-11697	17 2	098	1
42700-11986	17 2	099	1
43000-12279	17 2	050	1
43300-12570	17 2	051	1
43600-12856	17 2	052	1
43900-13155	17 2	053	1
44200-13449	17 2	054	1
44500-13769	17 2	055	1
44800-14061	17 2	056	1
45100-14350	17 2	057	1
45400-14649	17 2	058	1
45700-14937	17 2	059	1
46000-15256	17 2	060	1
46300-15540	17 2	061	1
46600-15854	17 2	062	1
46900-16143	17 2	063	1
47200-16454	17 2	064	1
47500-16750	17 2	065	1
47800-17052	17 2	066	1
48100-17372	17 2	067	1
48400-17675	17 2	068	1
48700-17965	17 2	069	1
49000-18258	17 2	070	1
49300-18594	17 2	071	1
49600-18918	17 2	072	1
49900-19224	17 2	073	1
50200-19508	17 2	074	1
50500-19819	17 2	075	1
50800-20136	17 2	076	1
51100-20432	17 2	077	1
51400-20747	17 2	078	1
51700-21056	17 2	079	1
52000-21370	17 2	080	1
52300-21670	17 2	081	1
52600-21977	17 2	082	1
52900-22289	17 2	083	1
53200-22582	17 2	084	1
53500-22900	17 2	085	1
53800-23222	17 2	086	1
54100-23537	17 2	087	1
54400-23846	17 2	088	1
54700-24169	17 2	089	1
55000-24496	17 2	090	1
55300-24796	17 2	091	1
55600-25122	17 2	092	1
55900-25427	17 2	093	1
56200-25742	17 2	094	1
56500-26086	17 2	095	1
56800-26379	17 2	096	1
57100-26683	17 2	097	1
57400-27002	17 2	098	1
57700-27330	17 2	099	1
58000-27654	17 2	100	1
58300-27969	17 2	101	1
58600-28260	17 2	102	1
58900-28595	17 2	103	1

READY

[illegible]

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UNIVAC 110B TIME/SHARING EXEC ---- MULTI-PROCESSOR SYSTEM --- VER. 25.07.37 B04 SITE • NYC.

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RUMID • 177050	FILE NAME • PR000177050	PART NUMBER • 00	DATE • 120370	SERVICE NAME •	PROGNO •
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NWC TP 5240
PART 2

[illegible]

2 RUM 177050-195262020050, AASLCVLEX-2, 4, 100/10 J. MEMCEK 4964551 X17

85501 19501 1026901

ACOPIN TEMP. 0 YFS.
FURPLR 0017-12/03-12:46

ACLOSE TEMP.

3 FOR US CYLX-CYLEXR
CYCLE 002 COMPILED BY 1201 0057E ON 03 DEC 70 AT 12:46:39.

MAIN PROGRAM

STORAGE USED: CODE(1) 00153; DATA(0) 002016; BLANK COMMON(2) 000000

COMMON BLOCKS:

0003 PLOTS 003497
0004 IDINFO 000006
0005 ARR2 000310
0006 MAIN 002027

EXTERNAL REFERENCES (BLOCK, NAME)

0007 MODESB
0010 SCOUTH
0011 SETSMG
0012 GRIMLS
0013 COEPS
0014 TEMP2
0015 EXITE
0016 NINTRS
0017 MROUS
0020 MIGLS
0021 MIG2K
0022 WERR2S
0023 MROUS
0024 MEIP5S
0025 NSTOPS

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000262	100L	0001	000365	10000L	0001	000501	10001L	0001	000234	102L	0001	000655	110L
0002	000257	111L	0001	000612	1176	0001	000342	125L	0001	000604	127L	0001	000075	1506
0003	000102	1346	0001	000103	1566	0001	000115	1646	0001	000117	1676	0000	001551	201F
0004	001553	202F	0000	001560	203F	0000	001567	204F	0000	001602	205F	0001	000154	2068
0005	000161	2126	0001	000166	2166	0001	000173	2226	0001	000200	2266	0001	000207	2336
0006	001605	302F	0000	001672	303F	0000	001746	307F	0001	000375	3176	0001	000402	3236
0007	000407	3276	0001	000435	3436	0001	000444	3506	0001	000453	3556	0001	000511	3716
0008	000516	3756	0000	001550	400F	0001	000523	4016	0001	000551	4156	0001	000550	4228
0009	000567	4276	0001	000610	4426	0001	001146	5016	0001	001000	5026	0001	001004	5076
0010	001061	51L	0001	001104	5306	0001	001114	5346	0001	000034	55L	0000	002000	A
0011	002013	AAA	0000	R 000330	ALFA	0003	R 000062	ALPHA	0000	R 000342	WETA	0000	I 000004	BOTTOM
0012	000315	C	0004	R 000000	CAA	0006	R 000005	CM	0006	R 000006	CM2	0000	R 001537	CT
0013	000013	D	0000	I 001530	I	0000	I 001512	ICH6	0003	I 000005	IO	0003	I 000023	IOAT
0014	000004	IEM	0006	I 000007	IGNOR	0000	I 001520	IMLD	0000	I 001543	II02	0000	I 001531	IL
0015	001532	ILI	0000	I 001547	ILJ	0000	I 001504	IMET	0006	I 000014	INAM	0000	I 001544	INM
0016	001562	INMIC	0006	I 002026	ION	0000	I 001545	IP04	0000	I 001546	IP341	0003	I 000026	INMMS
0017	000003	ITOP	0000	I 001526	IS	0003	I 003432	I?	0003	I 003443	110	0003	I 003444	111

0003	I	003445	I12	3003	I	003433	I2	0003	I	003434	I3	0003	I	003435	I4	0003	I	003436	I5
0003	I	003437	I6	0003	I	003440	K	0003	I	003441	K1	0003	I	003442	I9	0003	I	000000	J
0003	I	000001	JJJ	0006	I	000010	I7	0000	I	001527	K6	0003	I	003446	LEV	0006	R	000000	M6
0000	R	000000	M61	0006	R	000001	M62	0000	R	001523	ORDER	0003	R	003456	POINT5	0000	R	002512	R
0000	R	000002	RD	0000	R	001535	RH0C	0000	R	001534	RH0M	0006	R	000002	RI	0000	R	003491	RI1
0006	R	001157	RMAX	0006	R	001156	RH1M	0006	I	000011	R0	0000	R	001536	R00	0000	I	000001	R01
0003	R	002342	TP	0003	R	000002	RD	0003	R	001212	RI	0003	R	002652	T	0003	R	003172	T0
0003	R	000702	T1	0000	I	000003	TOP	0000	R	000354	T1	0002	R	000564	T2	0000	R	001174	T3
0006	R	000003	Y0LB	0003	R	001522	VP	0000	R	000005	V	0006	R	000004	W8	0000	R	001542	W81
0006	R	000026	Y	0006	R	001160	YH	0000	R	000000	Z	0006	R	000336	Y	0006	R	000646	Y4
0006	R	000070	YH	0000	R	001540	YD	0005	R	000000	Z								

```

C      MAIN LINE FOR CYCLE
10 REAL M6M62,M6I
20 INTEGER RO,R01,R0D,TOP,BOTTOM
30 DIMENSION I(200),YH(200),W(200),A(11),ALFA(10),OCTA(10)
40 I=1(200),YH(200),I(200),POINT(216,9)
50 DIMENSION IO(11),IOAT(11),INAM(10),IMET(6),ICMG(6),AAA(11)
60 I=1(200),Y(200),YA(200),IRMS(24),ID(200),TI(200),R(200)
70 2-R(200),T(200),VP(200),ALPHA(2CD),INOIC(10,6),IMLD(6)
80 COMMON /PLOTS/J,JJJ,R,IOTQ,ICN,ID,IOAT,IRMS,ALPHA,TD,TI,RI,VR,R;
90 IRP,T,INOIC,POINTS,I1,I2,I3,I4,I5,I6,I7,I8,I9,I10,I11,I12,LEV
100 COMMON /IDTMFO/CAAI6)/ARRZ/2/(200)
110 COMMON /MAIN/ M6,M62,RI,VOLD,VR,CM,CM2,IGNOR,K,RO,XD,D,INMM
120 1-X,Y,TA,IRMIN,RMAX,IR,YH,AAAA,IOR
130 DATA TOP,*,TOP */BOTTOM*/'BOTTOM'/
140 IGROW = 1
150 READ(5,400) CAA
160 CALL MOUESG(2,0)
170 CALL SCOUTH (2)
180 *CALL SETSYM6 (2,93,0.)
190 KK=2
200
210 IF (IGROW) 50,50,52
220 S2 READ (5,2CD) I1,I2,I3,I4,I5,I6,I7,I8,I9,I10,I11,I12,IMLO,*
230 I((INOIC(I),J,J-1,6),I=1,8)
240 DO 61 IL=1,10
250 61 IL=1,10
260 I1 INOIC(IL,I1)=INOIC(IL,YL)+IMLO(I,LI)
270 60 CONTINUE
280 READ (5,201) RMIM,RMAX,ORDER
290 KK=1
300 READ (5,204) ICN,IOAT,INAM,ID,IRMS,IMET,RMON,LCMG,RNOG
310 READ (5,201) VR,RI,R00,0
320 CT=0.0
330 M6=0.0
340 102 READ(5,202) R0,XB,YO
350 IF (R0-2) 100,100,101
360 101 CT=CT+1.0
370 M6=M6+YO
380 GO TO 102
390 100 CONTINUE

```

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00264 40* M6=(R00*2*CT)/M5 *1000.
00265 41* M6=1.0/M6
00266 42* RI=RI
00267 43* RI=RI*RI
00270 44* ITOP=TOP
00271 45* LEV=1
00272 46* VOLD=RI-R00*R00
00273 47* CM=(RI*RHOC)/(VOLD*RHOM)
00274 48* M61=M6
00275 49* M62=M6
00276 50* CM2=CM/2.
00277 51* M6= .001/M6
00300 52* WR= 1./WR
00301 53* FO=R00
00302 54* Y11= Y0
00303 55* M62=M6
00304 56* RMIN=RMIN/M62
00305 57* RMAX=RMAX/M62
00306 58*
00307 59* 125 R01=R0
00310 60* IF (I1) 127,127,125
00313 61* .125 GO TO 10000,10001,10000,111
00314 62* 10000. WRITE (16,302) IEN, ID, IDAT, INAN, M61, URI, R00, R11, CH, D
00341 63* WRITE (16,307) INET, RMGN, ICHS, RHOC, IRMS
00361 64* WRITE (16,303) ITOP
00364 65* K=11
00365 66* GO TO (127,127,10001),11
00366 67* 10001 WRITE (16,302) IEN, ID, IDAT, INAN, M61, URI, R00, R11, CH, D
00413 68* WRITE (16,307) INET, RMGN, ICHS, RHOC, IRMS
00433 69* WRITE (16,303) ITOP
00436 70* K=11
00437 71* 127 X11=D.0
00440 72* JJJ=0
00441 73* DO 110 I=2,200
00444 74* READ(5,203) IENOR, R0, R0, X11, Y11
00453 75* X11=X11)-X0
00454 76* IF (R0-901) 111,99,111
00457 77* 99 IF (Y11)-RMIN) 110,98,98
00462 78* 98 IF (Y11)-RMAX) 97,97,110
00465 79* 97 JJJ=JJJ+1
00466 80* XH(JJJ)=X11
00467 81* YH(JJJ)=Y11
00470 82* 110 CONTINUE
00472 83* 111 J=I-1
00473 84* I10R = ORDER
00474 85* I04=ORDER+1.
00475 86* CALL ORTHLS (XH,YH,M,JJJ,0,C,ALFA,BETA,I10R,T,T2,T3,IND)
00476 87* CALL COEFS (0,C,ALFA,BETA,I10R,A,T1,T2,T3,IND)
00477 88* CALL ORTHLS (YH,XH,M,JJJ,0,C,ALFA,BETA,I10R,T1,T2,T3,IND)
00500 89* CALL COEFS (0,C,ALFA,BETA,I10R,ARA,T1,T2,T3,IND)
00501 90* DO 500 I=1,JJJ
00504 91* YAT1=0.
00505 92* ALPHA11 = 0.
00506 93* DO 501 IPOU=1,10R

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```

00511 540 IP0U1=IP0U-1
00512 550 YAL1=YAL1 + A(IP0U1)*IHM(1)*IP0U1
00513 560 ALPHA(I)=ALPHA(I) + IP0U1*(IP0U1)*IHM(1)*IP0U1-1
00514 570 S01 CONTINUE
00516 580 S00 CONTINUE
00520 590 80 CALL TEMP2 (Z)
00521 100 60 TO (51-55)*KK
00522 101 51 Y(1)=Y(J+1)
00523 102 LEV=2
00524 103 KK=2
00525 104 CALL SETSMG (Z,51,0,1)
00526 105 CALL SETSMG (Z,46,0,1)
00527 106 DO 54 IL=1,5
00532 107 IL=IL+5
00533 108 DO 53 ILJ=1,6
00536 109 53 INDIC(IL,ILJ)=INDIC(IL,ILJ)
00540 110 54 CONTINUE
00542 111 IL=17
00543 112 IL=18
00544 113 IL=19
00545 114 IL=20
00546 115 IL=21
00547 116 IL=22
00550 117 IOP=80000
00551 118 IF(IOP) 50,50,125
00554 119 400 FORMAT(6A6)
00555 120 201 FORMAT(5F10,5)
00556 121 202 FORMAT(4X,11,10X,F6,0,1X,F5,0)
00557 122 203 FORMAT(6X,11,3X,12,1X,11,10X,F6,0,1X,F5,0)
00560 123 204 FORMAT(AS,5X,246,4X,4X,10A2/3(13X,6A2,7)6A2,4X,F10,4,5X,6A2,3X,
00560 124 1F10,4)
00561 125 205 FORMAT(12I1,1X,66I1)
00562 126 302 FORMAT(1,1,19X,EXPERIMENT NUMBER,AS,70X,PAGE 1/20X,13A6,A2,7)
00562 127 1 20X,FIRING DATE,246,4X,5X,FIRING BY,10A2,
00562 128 2 20X,MAGNIFICATION,67,4,10X,WRITING RATE,67,3,
00562 129 3 10X,USECS,
00562 130 4 20X,OUTSIDE RADIUS,65,2,10X,8X,INSIDE RADIUS,65,
00562 131 5 FS,2,10X,8X,C/M,65,4,7X,0,65,3,6X,MM/USECS,7)
00563 132 303 FORMAT(50X,A6/
00563 133 1M,6X,11,10X,RI,10X,TJ,10X,RJ,10X,TD,9X,RJ,
00563 134 1 9X,VJ,7X,ALPHA,6X,RI,6X,RJ,6X,VOL,6X,VOL,
00563 135 2 5X,USECS,6X,10X,7X,USECS,6X,10X,7X, (MM)
00563 136 3 6X,10X,6X,MM/USECS,3X,MM/USECS,5X,10X,7X, (MM)
00564 137 307 FORMAT(20X,METAL,6A2,5X,RHOM,65,3,6X,CC,10X,
00564 138 1,EXPLOSIVE,6A2,5X,RHOC,65,3,6X,CC,10X,
00564 139 2,2(20X,13A6,A2,7)7)
00565 140 50 CALL EXITG(2)
00566 141 END

```

NEW
-01

END OF COMPILATION: NO DIAGNOSTICS.

SCOPUT TPF6,TEMP.

FURPUR 0017-12/03-12:46

ACLOSE TEMP.

8ERS TPFs.

ACOPIN TEMP..TPFs.

8FREE TEMP.

8PRT.T TPFs.
FURPUR 0017-12/03-12:46

ASASCYLEX-2*TPFs ELEMENT TABLE

D NAME	VERSION	TYPE	DATE	TIME	SEQ	SIZE	PRE-TEXT	ICYCLE	WORD	PSMODE	LOCATION
TEMP2		FOR SYMB	30 OCT 70	10:49:41	1	1	36	5	0	1	1752
TEMP2R		RELOCATABLE	30 OCT 70	10:50:04	2	2	42	5	0	1	1828
TEMP3		FOR SYMB	30 OCT 70	10:50:12	3	3	74	5	0	1	1872
TEMP3R		RELOCATABLE	30 OCT 70	10:50:21	4	3	109	5	0	1	1946
POINT		FOR SYMB	30 OCT 70	10:50:26	5	5	8	5	0	1	2058
POINTR		RELOCATABLE	30 OCT 70	10:50:27	6	2	16	5	0	1	2066
ORTHLS		FOR SYMB	30 OCT 70	10:50:33	7	7	44	5	0	1	2084
ORTHLR		RELOCATABLE	30 OCT 70	10:50:38	8	1	15	5	0	1	2128
COEFS		FOR SYMB	30 OCT 70	10:50:39	9	9	31	5	0	1	2144
COEFSR		RELOCATABLE	30 OCT 70	10:50:43	10	1	12	5	0	1	2175
CYLEX		FOR SYMB	03 DEC 70	12:46:40	11	11	33	5	3	4	2180
CYLEXR		RELOCATABLE	03 DEC 70	12:46:43	12	3	43	5	3	4	2221
NEXT AVAILABLE LOCATION-											2267

ASSEMBLER PROCEDURE TABLE EMPTY

COBOL PROCEDURE TABLE EMPTY

FORTRAN PROCEDURE TABLE EMPTY.

ENTRY POINT TABLE EMPTY

8 FIN

NWC TP 5420
PART 2

RUNID: 177050 ACCOUNT: 105202020050 PROJECT: AASLCYLEX-2
LOAD 6720V 2/6 TEMP -1 177050
TIME: 00:00:02.283 IM: 14 OUT: 0 PAGES: 7
INITIATION TIME: 12:46:01-DEC 3, 1970
TERMINATION TIME: 12:47:00-DEC 3, 1970

2 FC2015 TEMP2.YEMP2R
CYCLE_000 COMPILED BY 1201 6057E ON 22 OCT 70 AT 17:13:47.

SUBROUTINE YEMP2 _ ENTRY POINT 001223

STORAGE USED: CODE(1) 001236: DATA(0) 000167: BLANK COMMON(2) 000000

COMMON BLOCKS:

0003	PLOTS	003447
0004	MAIN	002027

EXTERNAL REFERENCES (BLOCK NAME)

COOS	TEMP3
0006	SORI
0007	ATAM
0010	COS
0011	AFRR2S
0012	MWDUS
0013	NI01S
0014	NI02S
0015	WEYPS
0016	WEYR3S

STORAGE" ASSIGNMENT" (BLOCK, TYPE, RELATIVE LOCATION, NAME)

[illegible]


```

00201 580 20 WRITE(16,302) IPG
00204 550 WRITE(16,303) ITOP
00207 560 GO TO (30,30,101,11
00210 570 10 WRITE(16,302) IPG
00213 580 WRITE(16,303) ITOP
00216 590 30 IPG=IPG+1
00217 600 126 GO TO (40,50,40,11
00220 610 40 WRITE(16,301) ITOP
00220 620 IRIN=IRIN+1
00223 630 GO TO (121,121,50,11
00225 640 50 WRITE(16,301) ITOP
00225 650 IRIN=IRIN+1
00225 660 GO TO 121
00225 670 220 K=K+1
00225 680 IF (MOD(K,40)) 319,319,321
00225 690 319 GO TO (60,70,60,11
00225 700 60 WRITE(16,302) IPG
00225 710 WRITE(16,303) ITOP
00225 720 GO TO (80,40,70,11
00225 730 70 WRITE(16,302) IPG
00225 740 770 (16,303) ITOP
00225 750 80 IPG=IPG+1
00225 760 321 GO TO (15,25,13,11
00225 770 15 WRITE(16,301) ITOP
00225 780 GO TO (121,121,25,11
00225 790 25 WRITE(16,301) ITOP
00225 800 121 CONTINUE
00225 810 123 K=0
00225 820 POINTS(LEV,1,9)= 5.
00225 830 POINTS(LEV,2,9)= 10.
00225 840 POINTS(LEV,3,9)= 15.
00225 850 POINTS(LEV,4,9)= 19.
00225 860 POINTS(LEV,5,9)= 26.
00225 870 POINTS(LEV,6,9)= 32.
00225 880 POINTS(LEV,1,11)= 5. / M62
00225 890 POINTS(LEV,2,11)= 10. / M62
00225 900 POINTS(LEV,3,11)= 15. / M62
00225 910 POINTS(LEV,4,11)= 19. / M62
00225 920 POINTS(LEV,5,11)= 26. / M62
00225 930 POINTS(LEV,6,11)= 32. / M62
00225 940 DO 35 JNM=1,6
00225 950 POINTS(LEV,JNM,2)=0.
00225 960 DO 2001 IPW=1,100
00225 970 IPW=IPW+1
00225 980 2001 POINTS(LEV,JNM,2)= POINTS(LEV,JNM,2) +AAA(IPW)+((POINTS(LEV,JNM,3)
00225 990 1+IPW))
00225 1000 POINTS(LEV,JNM,3)=0.
00225 1010 POINTS(LEV,JNM,4)=0.
00225 1020 DO 1018 III=1,100
00225 1030 IV=III-1
00225 1040 POINTS(LEV,JNM,3)=POINTS(LEV,JNM,3)+ A(III)+((POINTS(LEV,JNM,2)+
00225 1050 11V)
00225 1060 POINTS(LEV,JNM,4)=POINTS(LEV,JNM,4)+IV+A(III)+((POINTS(LEV,JNM,2)+
00225 1070 11V-1))

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00350 1080 1010 CONTINUE
00352 1090 POINTS(LEV,JMM,5)= MG*POINTS(LEV,JMM,1) *RD
00353 1100 POINTS(LEV,JMM,2)= POINTS(LEV,JMM,2)*MR+.001
00354 1110 IF ( POINTS(LEV,JMM,2) .GT. T(IJJ)) GO TO 35
00355 1120 POINTS(LEV,JMM,6)= POINTS(LEV,JMM,2)*0
00357 1130 POINTS(LEV,JMM,7)=(POINTS(LEV,JMM,4)*RG)/(1.001*MR)
00360 1140 POINTS(LEV,JMM,9)= MG*POINTS(LEV,JMM,3) *RD
00361 1150 THETA= ATAN(POINTS(LEV,JMM,7)/D)/2.
00362 1160 POINTS(LEV,JMM,4)= (POINTS(LEV,JMM,7)/COS(THETA)) * S
00363 1170 GO TO 145.55.451.11
00364 1180 45 WRITE (6,1000) ITOP,POINTS(LEV,JMM,9),POINTS(LEV,JMM,2),POINTS(LEV
00366 1190 1,JMM,5),POINTS(LEV,JMM,6),POINTS(LEV,JMM,8),POINTS(LEV,JMM,7),
00368 1200 2*POINTS(LEV,JMM,4)
00376 1210 GO TO 135.75.55.11
00377 1220 55 WRITE (16,1000) ITOP,POINTS(LEV,JMM,9),POINTS(LEV,JMM,2),POINTS(LE
00377 1230 1V,JMM,5),POINTS(LEV,JMM,6),POINTS(LEV,JMM,8),POINTS(LEV,JMM,7),
00377 1240 2*POINTS(LEV,JMM,4)
00411 1250 35 CONTINUE
00411 1260 IF (LEV .EQ. 1) GO TO 1006
00413 1270 IF (LEV .EQ. 1) GO TO 1003 JMM=1*6
00415 1270 IF ( POINTS(1,JMM,2) .GT. T(IJJ) )OR. POINTS(2,JMM,2) .GT. T(IJJ)
00420 1280 S) GO TO 1003
00422 1290 T2 =(POINTS(1,JMM,2)+POINTS(2,JMM,2))/2.
00423 1310 45 =(POINTS(1,JMM,5)+POINTS(2,JMM,5))/2.
00423 1320 T08=(POINTS(1,JMM,6)+POINTS(2,JMM,6))/2.
00426 1330 RP8=(POINTS(1,JMM,4)+POINTS(2,JMM,4))/2.
00427 1350 VP7=(POINTS(1,JMM,7)+POINTS(2,JMM,7))/2.
00430 1360 AL4=(POINTS(1,JMM,9)+POINTS(2,JMM,9))/2.
00431 1370 GO TO (65,75,65).11
00431 1370 65 WRITE (6,1001) POINTS(1,JMM,9),12.45.T08.RP8.VP7.AL4
00442 1380 GO TO (1003,1003,75).11
00443 1390 75 WRITE (16,1001) POINTS(1,JMM,9),12.45.T08.RP8.VP7.AL4
00454 1400 1003 CONTINUE
00456 1410 1006 IF (I2+I3+I4+I5+I6) 125,125,126,1
00461 1420 1261 CALL TEMP3
00462 1430 125 RETURN
00463 1440 1001 FORMAT(1MC,AVERAGE VALUES AT 'F3.0,' MR',2E6(F9.5,3),
00464 1450 END

```

END OF COMPILATION: NO DIAGNOSTICS.

FOR IS TEMP, TEMP3R

SUBROUTINE TEMP3 ENTRY POINT 003229

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      STORAGE USED: CODE(1) DDJ234; DATA(C) COLL25; BLANK COMMON(2) 00000000

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COMMON BLOCKS:

0003	YDINF0	000006
0004	ARRZ	000310
0005	PL015	001447

EXTERNAL REFERENCES (BLOCK NAME)

0006	FONT2
0007	FONT12
0008	VECI6
0009	SETSM6
0010	PAGC6
0011	08JC16
0012	SUBJEG
0013	UNSC22
0014	GRIO6
0015	LEGN06
0016	TEXT6
0017	NUMB6
0018	SCAL22
0019	POINT6
0020	POINTR
0021	NEAR15

STORAGE ASSIGNMENT	BLOCK	TYPE	RELATIVE LOCATION	NAME
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10
11	11	11	11	11
12	12	12	12	12
13	13	13	13	13
14	14	14	14	14
15	15	15	15	15
16	16	16	16	16
17	17	17	17	17
18	18	18	18	18
19	19	19	19	19
20	20	20	20	20
21	21	21	21	21
22	22	22	22	22
23	23	23	23	23
24	24	24	24	24
25	25	25	25	25
26	26	26	26	26
27	27	27	27	27
28	28	28	28	28
29	29	29	29	29
30	30	30	30	30
31	31	31	31	31
32	32	32	32	32
33	33	33	33	33
34	34	34	34	34
35	35	35	35	35
36	36	36	36	36
37	37	37	37	37
38	38	38	38	38
39	39	39	39	39
40	40	40	40	40
41	41	41	41	41
42	42	42	42	42
43	43	43	43	43
44	44	44	44	44
45	45	45	45	45
46	46	46	46	46
47	47	47	47	47
48	48	48	48	48
49	49	49	49	49
50	50	50	50	50
51	51	51	51	51
52	52	52	52	52
53	53	53	53	53
54	54	54	54	54
55	55	55	55	55
56	56	56	56	56
57	57	57	57	57
58	58	58	58	58
59	59	59	59	59
60	60	60	60	60
61	61	61	61	61
62	62	62	62	62
63	63	63	63	63
64	64	64	64	64
65	65	65	65	65
66	66	66	66	66
67	67	67	67	67
68	68	68	68	68
69	69	69	69	69
70	70	70	70	70
71	71	71	71	71
72	72	72	72	72
73	73	73	73	73
74	74	74	74	74
75	75	75	75	75
76	76	76	76	76
77	77	77	77	77
78	78	78	78	78
79	79	79	79	79
80	80	80	80	80
81	81	81	81	81
82	82	82	82	82
83	83	83	83	83
84	84	84	84	84
85	85	85	85	85
86	86	86	86	86
87	87	87	87	

0001	000444	18L	0001	000446	17L	0001	000357	1366	0001	000303	2666	0001	000033	18L
0001	000561	20L	0001	001152	20L	0001	000423	2016	0001	001164	22L	0001	000074	2246
0001	000565	25L	0001	000665	2606	0001	000774	2706	0001	001275	3L	0001	001177	30L
0001	000543	3010L	0001	001257	3011L	0001	000774	3012L	0001	002504	3014L	0001	001171	3013L
0001	001701	32L	0001	001137	3266	0001	001207	1466C	0001	001301	35L	0001	002012	4L
0001	002210	40L	0001	001401	4026	0001	001276	4126C	0001	002412	42L	0001	002016	45L
0001	001854	4506	0001	001774	4706	0001	002222	5L	0001	003075	50L	0001	003077	52L
0001	002142	5306	0001	002166	5406	0001	002226	55L	0001	002367	5726	0001	003207	6L
0001	002435	6126	0001	002626	6406	0001	002526	656C	0001	003054	7106	0001	003122	7306
0005	000062	ALPMA	0003	000020	CA4	0001	000000	CA4	0001	000000	CA4	0001	000000	CA4
0008	000310	HOLVO	0005	000065	IO	0005	000073	FNAT12	0005	000000	FNAT12	0000	000000	HOLVO
0005	000004	YEM	0001	000640	IMOP	0005	000372	FNAT	0001	000640	IMOP	0000	000000	HOLVO
0000	000031	1416	0000	000635	IP	0000	000372	IPM1C	0001	000620	1401	0000	001104	1416S
0005	000063	1101	0000	000633	IX	0001	000634	IP	0005	000326	1401S	0000	000036	154C
0005	000444	ITOP	0000	000645	11	0005	000313	17	0005	000312	11	0005	000043	110
0005	000436	IS	0005	000445	112	0005	000313	17	0005	000313	13	0005	000435	14
			0005	000437	16	0005	000441	17	0005	000441	18	0005	000442	19

0000	I	000621	MAX
0005	R	001212	R1
0000	R	000625	INY
0000	R	000622	VMAX

[illegible]

0000 I 000642 JZ
0005 R 002342 RP
0005 R 000702 YI
0000 R 000627 Y

0005 I 00001 JJJ
0005 * 002032 R
0005 R 000372 IO
0000 R 000626 X
0005 R 000000 Z

0005 I 000000 J
0005 R 003256 P01MIS
0005 R 002652 Y
0005 R 001522 VP
0000 R 000623 YMIN

[illegible]

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00222 C
730 C ASSUMESIPHI IS KNOWN AND DISTINCT FOR EACH PIOT. VARI=INCEP*BNY VARIABLE

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NWC TP 5240
PART 2

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00266 1000 YN = ABS(YMAX)
00267 1010 DO 27 ISAC = 1.0
00272 1020 INT6 = 10.0*(ISAC-1.0)*YM
00273 1030 Y = -INT6
00274 1040 CALL SCALZ(2.0,X,Y,IX,IV)
00275 1050 IV=IV+31
00276 1060 CALL UMSC22(2.0,X,Y,IX,IV)
00277 1070 27 CALL MUNBRG (2.0,INT6,Y,3.0,INT6)
00301 1080 CALL UMSC22 (2.0,X,Y,350.1700)
00302 1090 CALL LEGNOG (2.0,X,Y,11.11,INT6LS-JS*SU())
00303 1100 CALL VECIG (2.0,FONT12.0)
00304 1110 CALL TEXTG (2.0,3.34SLM )
00305 1120 CALL VECIG (2.0,FONT2.0)
00306 1130 CALL TEXTG (2.0,6.6MSEC2U))
00307 1140 CALL UMSC22 (2.0,X,Y,390.2160)
00310 1150 CALL LEGNOG (2.0,X,Y,40.10)
00311 1160 CALL UMSC22 (2.0,X,Y,3910.2460)
00312 1170 CALL LFGMOG (2.0,X,Y,80.1RMNS)
00313 1180 CALL UMSC22 (2.0,X,Y,3960.2660)
00314 1190 CALL LEGNOG (2.0,X,Y,6.110P)
00315 1200 CALL TEXTG (2.0,25.0)
00316 1210 CALL TEXTG (2.0,5.1EN)
00317 1220 CALL TEXTG (2.0,19.0)
00320 1230 CALL TEXTG (2.0,16.10AT)
00321 1240 IPHI=2
00322 1250 INDEP=2
00323 1260 IDCP= 8
00324 1270 IP=0
00325 1280 DO 20 IDX= IMOX,JJJ
00330 1290 IF (YMIN + Y(IDX)) 21,21,22
00333 1300 21 IF (IP(IDX)) - RD -100.1 23+23.20
00336 1310 23 IP=IP+1
00337 1320 HOLDY(IP)= RP(IDX)-RD
00340 1330 HOLDY(IP)= -Y(IDX)
00341 1340 20 CONTINUE
00343 1350 22 CALL POINTG (2.0,IP,HOLDY,HOLDY)
00344 1360 INDI=IDX
00345 1370 DO 3011 J2=1.6
00350 1380 IF (INDIC(IPHI,J2) .EQ. 0) GO TO 3011
00352 1390 Y = -POINTS(LEV,J2,INDEP)
00353 1400 IF (Y .LT. YMIN .OR. Y .GT. YMAX) GO TO 3011
00355 1410 X = POINTS(LEV,J2,INDEP) - RD
00356 1420 CALL POINTH(2.0,X,Y,270.0.1)
00357 1430 3011 CONTINUE
00361 1440 CALL PAGEG (2.0,1.1)
00362 1450 IF (IDR .LT. JJJ) GO TO 25
00364 1460 3 IF (IDR .EQ. 0) GO TO 9
00364 1470 C
00366 1480 IMOX=1
00367 1490 MAX=Y(INDEX)
00370 1500 CALL SETSNG (2.0,0.0)
00371 1510 YMAX=(MAX/101)*20
00372 1520 YMIN= YMAX-10.
00373 1530 CALL SUBJEG (2.0.0,YMIN,100.0,YMAX)

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00374 1590 CALL UMSC22 (Z.TMX,TNY,440.275)
00375 1590 CALL BRID6 (Z.1.1.10.10)
00376 1590 CALL UMSC22 (Z.TMX,TNY,440.275.2800)
00377 1590 CALL LEGMD6 (Z.X.Y.23.23MR - RSL5-05.5U (SLMMSU))
00400 1590 CALL SETSNG (Z.46.270.1)
00401 1590 DO 36 ISAC = 1.11
00404 1590 X=INTG
00405 1590 X=INTG
00406 1590 36 CALL NUMBR6 (Z.X.TNY.3.INTG)
00410 1590 YN = ABSIYPAX)
00411 1590 DO 37 ISAC = 1.4
00414 1590 INTG = 10.0 (ISAC-1).YN
00415 1590 Y = -INTG
00416 1590 CALL SCAL22 (Z.X.Y.12.12)
00417 1590 IF IV=31
00420 1590 CALL UMSC22 (Z.X.Y.12.12)
00421 1590 37 CALL NUMBR6 (Z.TMX,Y.3.INTG)
00423 1590 CALL UMSC22 (Z.X.Y.350.170)
00424 1590 CALL LEGMD6 (Z.X.Y.12.12)
00425 1590 CALL VECIG (Z.FONT12.C)
00426 1590 CALL TEXT6 (Z.3.JMELM)
00427 1590 CALL TEXT6 (Z.FONT12.C)
00430 1590 CALL TEXT6 (Z.6.6WSECSSU)
00431 1590 CALL UMSC22 (Z.X.Y.350.2680)
00432 1590 CALL LEGMD6 (Z.X.Y.80.10)
00433 1590 CALL UMSC22 (Z.X.Y.391F.265C)
00434 1590 CALL LEGMD6 (Z.X.Y.80.10)
00435 1590 CALL UMSC22 (Z.X.Y.391F.265C)
00436 1590 CALL LEGMD6 (Z.X.Y.80.10)
00437 1590 CALL TEXT6 (Z.5.IEM)
00440 1590 CALL TEXT6 (Z.19.0)
00441 1590 CALL TEXT6 (Z.16.10AT)
00442 1590 IPHIC = 3
00443 1590 INDEP = 2
00444 1590 INDEP = 5
00445 1590 XP=0
00446 1590 DO 38 IOR=INOR+J
00447 1590 IF (YMIN + YI10X) 31.32.32
00452 1590 31 IF (R110X)-80-100.1 33.33.30
00455 1590 33 IF (R110X)-80-100.1 33.33.30
00460 1590 33 IF (R110X)-80-100.1 33.33.30
00461 1590 WOLR(IP)= R110X)-80
00462 1590 WOLR(IP)= -YI10X)
00463 1590 30 CONTINUE
00465 1590 32 CALL POINT6 (Z.IP.WOLR.WOLR)
00466 1590 INDEP=10X
00467 1590 DO 3012 J2=1.6
00472 1590 IF (INDIC(IPM1-J2).EQ.0) 60 TO 3012
00474 1590 Y = -POINTS(LEV-J2-INDEP)
00475 1590 IF (Y .LT. YMIN .OR. Y .GT. YMAX) 60 TO 3012
00477 1590 X = POINTS(LEV-J2-INDEP) -80
00500 1590 CALL POINT6 (Z.X.Y.270.1)
00501 1590 3012 CONTINUE
00503 1590 CALL PAGE6 (Z.0.1.1)

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NWC TP 5240
PART 2

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00504 2000 IF (200 .LT. J) GO TO 35
00506 2010 4 IF (IS .EQ. 0) GO TO 5
00508 2100 BEGIN PLOT FOR GRAPH FOUR
00510 2110 INDEX=1
00512 2120 45 MAXI=RP(INDX)
00514 2130 YMAX=-(KXIX/10)*10
00516 2140 YMIN=YMAX-30.
00518 2150 CALL SETSMG (2,46,0.)
00520 2160 CALL SUBJEC (2,0,YMIN,5,YMAX)
00522 2170 CALL UNSC22 (2,0,YMIN,YMAX,2753)
00524 2180 CALL SPIDC (2,1,1,1,1,10)
00526 2190 CALL UNSC27 (2,X,Y,875,2400)
00528 2200 CALL LEGMD6 (2,X,Y,207945ALLPHAS-JS-SU* (SLHWSU))
00530 2210 CALL VECIG (2,0,12,0)
00532 2220 CALL TEXTG (2,0,3,MSLM)
00534 2230 CALL VECIG (2,0,12,0)
00536 2240 CALL TEXTG (2,0,6,EMSECSU)
00538 2250 CALL SETSMG (2,46,270.)
00540 2260 DO 46 ISAC=1,6
00542 2270 INTG=ISAC-1
00544 2280 X=INTG
00546 2290 46 CALL NUMBRG (2,X,Y,3,INTG)
00548 2300 YH=ANSIYMAX)
00550 2310 DO 47 ISAC=1,4
00552 2320 INTG=10+ISAC-1)*YM
00554 2330 Y=-INTG
00556 2340 CALL SCAL27 (2,X,Y,IX,IY)
00558 2350 IV=IV+31
00560 2360 CALL UNSC22 (2,X,Y,IX,IY)
00562 2370 47 CALL NUMBRG (2,X,Y,3,INTG)
00564 2380 CALL UNSC22 (2,X,Y,350,1700)
00566 2390 CALL LEGMD6 (2,X,Y,207945ALLPHAS-JS-SU* (SLHWSU))
00568 2400 CALL UNSC27 (2,X,Y,3900,2660)
00570 2410 CALL LEGMD6 (2,X,Y,40,10)
00572 2420 CALL UNSC22 (2,X,Y,3910,2660)
00574 2430 CALL LEGMD6 (2,X,Y,80,19MS)
00576 2440 CALL UNSC27 (2,X,Y,3850,2660)
00578 2450 CALL LEGMD6 (2,X,Y,6,110P)
00580 2460 CALL TEXTG (2,25,*) EXPERIMENT NUMBER *)
00582 2470 CALL TEXTG (2,5,1E)
00584 2480 CALL TEXTG (2,19,*) DATE FIRED- *)
00586 2490 CALL TEXTG (2,16,10AT)
00588 2500 IPMI=4
00590 2510 IDCP=4
00592 2520 IDCP=4
00594 2530 IP=0
00596 2540 DO 48 I=1,INDX,JJJ
00598 2550 IF (YMIN .GT. RP(INDX)) 41,41,42
00600 2560 41 IF (ALPHA(INDX)-4.) 43,43,48
00602 2570 43 IP=IP+1
00604 2580 MOLOX(IP)=ALPHA(INDX)
00606 2590 MOLOX(IP)=RP(INDX)
00608 2600 48 CONTINUE
00610 2610 42 CALL POINTG (2,IP,MOLOX,MOLOX)

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00610 2620      INDX=IOX
00611 2630      DO 3014 J2=1,5
00612 2640      IF (INDX(IPMI,J2) .EQ. 0) GO TO 3014
00613 2650      V = -POINTS(LEV,J2,INDEP)
00614 2660      IF (V .LT. YMIN .OR. V .GT. YMAX) GO TO 3014
00615 2670      X = POINTS(LEV,J2,IDEP)
00616 2680      CALL POINTR(2,X,Y,270.,1)
00617 2690      3014 CONTINUE
00618 2700      CALL PAGE(2,0,1,1)
00619 2710      IF (IOX.LT.JJJ) GO TO 45
00620 2720      5 IF (IG .EQ. 0) GO TO 6
00621 2730      C BEGIN PLOT NUMBER FIVE
00622 2740      INDX=1
00623 2750      55 MAXX=TO(INDX)
00624 2760      YMAX=-(MAXX/10)+10
00625 2770      YMIN=YMAX-30.
00626 2780      CALL SETSHG (2,46,0,1)
00627 2790      CALL SUBJEG (2,0,0,YMIN+100,0,YMAX/
00628 2800      CALL UNSCZ2 (2,1MX,TNY,440,2753)
00629 2810      CALL GRIDG (2,1,1,1,10,10)
00630 2820      CALL UNSCZ2(2,X,Y,875,2800)
00631 2830      CALL LEGMDG(2,X,Y,19,1,1MX,15,28,5U (SLMMSU))
00632 2840      CALL SETSHG (7,46,270.)
00633 2850      DO 56 ISAC = 1,11
00634 2860      INTG = (ISAC-1)*10
00635 2870      X=INTG
00636 2880      56 CALL NUMBRG(2,X,TNY,3,INTG)
00637 2890      YN = ABS(YMAX)
00638 2900      DO 57 ISAC = 1,4
00639 2910      INTG = 10*(ISAC-1)+YM
00640 2920      Y = -INTG
00641 2930      CALL SCALZ2(2,X,Y,IX,IV)
00642 2940      IV=IV+1
00643 2950      CALL UNSCZ2(2,X,Y,IX,IV)
00644 2960      57 CALL NUMBRG (2,1MX,Y,3,INTG)
00645 2970      CALL UNSCZ2 (2,X,Y,350,1700)
00646 2980      CALL LEGMDG (2,X,Y,23,23,15,5,0 X QUD (SLMMSU))
00647 2990      CALL UNSCZ2 (2,X,Y,3960,2660)
00648 3000      CALL LEGMDG (2,X,Y,80,10)
00649 3010      CALL UNSCZ2 (2,X,Y,3910,2660)
00650 3020      CALL LEGMDG (2,X,Y,80,10,1MX,5)
00651 3030      CALL UNSCZ2 (2,X,Y,3060,2660)
00652 3040      CALL LEGMDG (2,X,Y,6,11TOP)
00653 3050      CALL TEXTG (2,5,1MX) EXPERIMENT NUMBER *)
00654 3060      CALL TEXTG (2,19,0 DATE FINED- *)
00655 3070      CALL TEXTG (2,16,10AT)
00656 3080      IPMI=5
00657 3090      INDEP=6
00658 3100      INDEP= 5
00659 3110      IP=9
00660 3120      DO 58 IOR=INOR,JJJ
00661 3130      IF (IYMIN + TO(IOR)) 51,51,52
00662 3140      51 IF (RIOR) -ICP,1 53,53,50
00663 3150

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00720 3160      S3 IP=IP+1
00721 3170      MOLOX(IP)=R(IX)
00722 3180      MOLOX(IP)=TD(IX)
00723 3190      S0 CONTINUE
00724 3200      S2 CALL POINT6 (Z,IP,MOLDX,MLOY)
00725 3210      INDX=IX
00726 3220      DO 3015 J2=1,6
00727 3230      IF (INDX(IPHI,J2).EQ.0) GO TO 3015
00728 3240      Y = -POINTS(LEV,J2,INDEX)
00729 3250      IF (Y .LT. YMIN .OR. Y .GT. YMAX) GO TO 3015
00730 3260      X = POINTS(LEV,J2,INDEX)
00731 3270      CALL POINT4(Z,X,Y,270.0)
00732 3280      S015 CONTINUE
00733 3290      CALL PAGE6 (Z,0.1,1)
00734 3300      IF (IX .LT. JJJ) GO TO 55
00735 3310      6 RETURN
00736 3320      ENO

```

END OF COMPILATION: NO DIAGNOSTICS.

8 FOR-15 POINT-POINTER
CYCLE 000 COMPILED BY 1201 0057E ON 22 OCT 70 AT 17:14:00.

SUBROUTINE POINTR ENTRY POINT 000347

STORAGE USED: CODE(1) 000015; DATA(0) 000054; BLANK COMMON(2) 000000

EXTERNAL REFERENCES (BLOCK NAME)

0003 GETSMG
0004 SETSMG
0005 SCALZ2
0006 LIMES6
0007 UNSCZ2
0010 COS
0011 SIN
0012 WERR36

STORAGE ASSIGNMENT (BLOCK TYPE, RELATIVE LOCATION, NAME)

0001 000321 10L 0000 R 000002 ANGEL 0000 000027 INJPS
0000 I 000010 JXX 0000 I 000013 JXX 0000 I 000014 JJY
0000 I 000011 JXX 0000 I 000005 JV 0000 I 000012 JJY
0000 R 000016 U 0000 R 000000 WIDTH 0000 I 000004 IX
0000 I 000006 JX 0000 I 000001 TEXT

00101 10 SUBROUTINE POINTR (2,X,Y,ANG,IOP1)
00101 20 C 0 OPTION IS TRIANGLE
00101 30 C 1 OPTION IS ARROW
00103 40 DIMENSION Z(200)
00103 50 CALL GETSMG (2,30,WIDTH)
00105 60 CALL GETSPG (2,31,TEXT)
00105 70 CALL SETSMG (2,30,5)
00107 80 CALL SETSPC (2,31,0)
00110 90 ANG = (ANG/57.295) - 1.5708
00111 100 CALL SCALZ2(2,X,Y,TEXT)
00112 110 CALL LIMES6 (2,0,X,Y)
00113 120 JV = -90
00114 130 JX = 10
00115 140 JJY = -90
00116 150 JX = -10
00117 160 JX = JX * COS(ANG) - JY * SIN(ANG) * IX
00120 170 JY = JY * COS(ANG) - JX * SIN(ANG) * IX
00121 180 JXX = JX * COS(ANG) - JY * SIN(ANG) * IX
00122 190 JJY = JY * COS(ANG) - JX * SIN(ANG) * IX
00123 200 CALL UNSCZ2(2,0,JX,JY)
00124 210 CALL LIMES6 (2,1,0)
00125 220 CALL UNSCZ2(2,0,JXX,JYY)

00126	230	CALL LINESG (2,1,7,U)	
00127	240	CALL LINESG (2,1,X,Y)	
00130	250	IF (IOPT .EQ. 0) GO TO 10	
00132	260	JK = 0	
00133	270	JV = -80	
00134	280	JXX = JX*COS(ANGL)+JY*SIN(ANGL)	•IX
00135	290	JYY = JY*COS(ANGL)-JX*SIN(ANGL)	•IV
00136	300	CALL UNSCZ2(2,Y,U,JXX,JYY)	
00137	310	CALL LINESG (2,1,7,U)	
00140	320	CALL LINESG (2,1,X,Y)	
00141	330	10 CALL SETSMG (7,10,WIDTH)	
00142	340	CALL SETSMG (7,31,TEXT)	
00143	350	RETURN	
00144	360	END	

END OF COMPILATION: NO DIAGNOSTICS.

2 FOR 15 ORTHLS. ORTHLR
CYCLE 000 COMPILED BY 1201 0057E ON 22 OCT 70 AT 17:14:09.

SUBROUTINE ORTHLS ENTRY POINT 000354

STORAGE USED: CODE(1) 000026; DATA(0) 000053; BLANK COMMON(2) 000000

EXTERNAL REFERENCES (BLOCK, NAME)

0003 MEXP58
0003 MERR35

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000051 1L	0001	000172 1FL	0003	000000 1176	0003	000102 1358	0001	000311 15L
0001	000147 1556	0001	000316 16L	0001	000203 173G	0001	000060 2L	0001	000231 2068
0001	000250 2146	0001	000272 2246	0001	000325 24GG	0001	000072 3L	0001	000313 4L
0001	000327 5L	0001	000317 7L	0001	000355 9L	0001	000164 9L	0000	R 000003 0
0000	I 000002 1	0000	I 000005 11	0000	000014 14JPS	0000	I 000000 0J1	0000	R 000011 0
0000	R 000004 00	0000	R 000006 5	0000	R 000001 SUM	0000	R 000007 SUMTP	0000	R 000010 TEMP

00101	10	C	SUBROUTINE ORTHLS (X,Y,Z,W,M,N,L,J,C,ALPHA,BETA,R,T1,T2,T3,IND)	ORTHLS
00101	20	C		ORTHLS
00101	30	C	THIS SUBROUTINE COMPUTES THE COEFFICIENTS OF THE POLYNOMIAL	ORTHLS
00101	40	C	EQUATION OF DEGREE K AND THE ALPHA AND BETA PARAMETERS.	ORTHLS
00101	50	C		ORTHLS
00103	60	C	DIMENSION X(200),Y(200),Z(200),C(11),ALPHA(11),BETA(11),T1(200),	
00103	70	C	T2(200),T3(200)	
00103	80	C		ORTHLS
00103	90	C	PROGRAM INITIALIZATION.	ORTHLS
00103	100	C		ORTHLS
00104	110	C	KJ1=K-J+1	
00105	120	C	IF (MJI) 16,16,20	
00110	130	C	20 CONTINUE	
00111	140	C	SUM=0.0	
00112	150	C	17(11-11 21+3+2)	
00115	160	C	21 CONTINUE	
00116	170	C	DO 2 1=1,N	
00121	180	C	T1(1)=X(1)	
00122	190	C	IF (J) 22+27+1	
00125	200	C	22 CONTINUE	
00126	210	C	SUM=SUM+1.0	
00127	220	C	GO TO 2	
00130	230	C	1 SUM=SUM+X(1)*C(12+J)	
00131	240	C	2 Y(1)=1.0	
00133	250	C	GO TO 7	
00136	260	C	3 DO 6 1=1,N	

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00137 270 T2(1)=X(1)
00140 280 IF(J) 23,23,4
00143 290 23 CONTINUE
00146 300 SUM=SUM+M(I)
00149 310 GO TO 5
00152 320 9 SUM=SUM+M(I)*X(1)+(2-J)
00155 330 5 X(1)=M(I)*X(1)
00158 340 6 Y(I)=M(I)*X(1)
00161 350 7 R=0.0
00164 360 DO 9 I=1,M
00167 370 IF(J) 24,24,8
00170 380 24 CONTINUE
00173 390 T2(1)=1.0
00176 400 GO TO 9
00179 410 8 T2(1)=T2(1)+J
00182 420 9 T1(1)=0.0
00185 430 C
00188 440 C BEGIN COMPUTATION.
00191 450 C
00194 460 C
00197 470 I=1
00200 480 DO 10 I=1,M
00203 490 IF(J) 11,11,14
00206 500 11 S=5+I)*T2(1)
00209 510 C
00212 520 C COMPUTATION OF A COEFFICIENT IN THE POLYNOMIAL EQUATION.
00215 530 C
00218 540 C(I)=S/R
00221 550 IF(I)=J) 25,15,15
00224 560 25 CONTINUE
00227 570 C
00230 580 C COMPUTATION OF AN ALPHA FOR THE POLYNOMIAL EQUATION.
00233 590 C
00236 600 SUMXP=0.0
00239 610 DO 12 I=1,M
00242 620 12 SUMXP=SUMXP+X(1)*T2(1)+T2(1)
00245 630 ALPHA(I)=SUMXP/R
00248 640 C
00251 650 C COMPUTATION OF A NEW POLYNOMIAL.
00254 660 C
00257 670 DO 13 I=1,M
00260 680 TEMP=T2(1)
00263 690 T2(1)=T2(1)-ALPHA(I)*T2(1)+X(1)
00266 700 13 T1(1)=TEMP
00269 710 C
00272 720 C COMPUTATION OF A BETA FOR THE POLYNOMIAL EQUATION.
00275 730 C
00278 740 B=0.0
00281 750 DO 14 I=1,M
00284 760 14 B=B+M(I)*T2(1)+T2(1)
00287 770 BETA(I)=B/R
00290 780 B=0.0
00293 790 B=BETA(I)
00296 800 II=II+1
00299 810

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00234 810 60 TO 10 ORTHLS
00234 820 C ORTHLS
00234 830 C SUCCESSFUL RETURN. ORTHLS
00234 840 C ORTHLS
00235 850 15 IM01=1 ORTHLS
00236 860 RETURN ORTHLS
00236 870 C ORTHLS
00236 880 C ORTHLS
00236 890 C ORTHLS
00237 900 16 DO 17 II=1-K ORTHLS
00242 910 CII=-0.0 ORTHLS
00243 920 ALPHA (II)=0.0 ORTHLS
00244 930 17 BETA(II)=0.0 ORTHLS
00246 940 C(K+1)=0.0 ORTHLS
00247 950 IM01=-1 ORTHLS
00250 960 RETURN ORTHLS
00251 970 EMO ORTHLS

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END OF COMPILATION: NO DIAGNOSTICS.

8 FOR 15 COEF5.COEFSR
CYCLE 000 COMPILED BY 1201 0007E ON 22 OCT 70 AT 17:14:16.

SUBROUTINE COEFS ENTRY POINT 000266

STORAGE USED: COE(1) 000330; DATA(1) 000055; BLANK COMMON(2) 000000

EXTERNAL REFERENCES (BLOCK NAME)

0003 WEAR35

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	00053	1136	0001	000114	1316	0001	000150	1436	0001	000175	1606	0001	000217	1670
0001	000235	1766	0001	000067	21	0001	000164	51	0001	000221	01	0001	000226	91
0000	2	000001	0	0000	1	000003	11	0000	1	000000	00	0000	1	000002
0000	1	000004	01	0000	1	000005	02							

00101	10	C	SUBROUTINE COEFS (J=C*ALPHA+ETA*NC+A*TI+T2+T3+IMD2)	COEFS
00101	20	C		COEFS
00101	30	C	THIS SUBROUTINE COMPUTES THE A COEFFICIENTS FOR A POLYNOMIAL	COEFS
00101	40	C	OF DEGREE NC WHERE NC IS LESS THAN OR EQUAL TO K.	COEFS
00101	50	C		COEFS
00101	60	C	DIMENSION C(11),ALPHA(11),ETA(11),A(11),T1(20),T2(20),T3(20)	COEFS
00101	70	C		COEFS
00101	80	C	PROGRAM INITIALIZATION.	COEFS
00101	90	C		COEFS
00104	100	C	KCJ=K-J+1	COEFS
00105	110	C	IF(KCJ) 9,9,20	COEFS
00110	120	C	20 CONTINUE	COEFS
00111	130	C	B=0.0	COEFS
00112	140	C	B=1/M-1/KCJ1	COEFS
00115	150	C	A(M)=C(M)	COEFS
00116	160	C	T1(M)=0.0	COEFS
00117	170	C	T2(M)=0.0	COEFS
00120	180	C	1 T3(M)=0.0	COEFS
00127	190	C	IF(KC-J) 5,5,21	COEFS
00125	200	C	21 CONTINUE	COEFS
00126	210	C	I1=2	COEFS
00126	220	C	BEGIN COMPUTATION.	COEFS
00126	230	C		COEFS
00127	240	C	2 T2(I1)=1.0	COEFS
00130	250	C	B=3/M-2/I1	COEFS
00133	270	C	T3(M)=T2(M-1)-T2(M-1)*ALPHA(I1-1)-B*T1(M)	COEFS
00133	280	C		COEFS
00133	290	C	COMPUTATION OF AN A COEFFICIENT.	COEFS

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00133 200 C 3 A(MM-1)=A(MM-1)+C(I11)+T3(MM) COEFS
00134 310 IF(I1-KCJ1) 22,5,5 COEFS
00136 320 22 CONTINUE
00141 330 C
00141 340 C
00141 350 C RESETING THE VECTORS FOR THE NEXT COEFFICIENT. COEFS
00141 360 C COEFS
00142 370 00 Q MM=1+I1 COEFS
00145 380 T1(MM)=T2(MM) COEFS
00146 390 Q T2(MM)=T3(MM) COEFS
00148 400 Q=Q+A(I1-1) COEFS
00151 410 I1=I1+1 COEFS
00152 420 GO TO 2 COEFS
00153 430 5 IF(I1) 8,0,23 COEFS
00156 440 23 CONTINUE COEFS
00156 450 C COEFS
00156 460 C ARRANGE COEFFICIENTS PROPERLY IF J IS NOW ZERO. COEFS
00156 470 C COEFS
00157 480 00 K MM=1+KCJ1 COEFS
00157 490 M1=KCJ1-MM+1 COEFS
00163 500 M2=M1+J COEFS
00164 510 6 A(M2)=A(M1) COEFS
00166 520 00 7 MM=1+J COEFS
00171 530 7 A(MM)=B,0 COEFS
00171 540 C COEFS
00171 550 C SUCCESSFUL RETURN. COEFS
00171 560 C COEFS
00173 570 0 IM02=02 COEFS
00174 580 RETURN COEFS
00174 590 C COEFS
00174 600 C ERROR RETURN. SET ALL THE A COEFFICIENTS EQUAL TO ZERO. COEFS
00174 610 C COEFS
00175 620 5 00 10 MM=1+K COEFS
00200 630 10 A(MM)=B,0 COEFS
00202 640 A(KC+1)=0,0 COEFS
00203 650 IM02=2 COEFS
00204 660 RETURN COEFS
00205 670 END COEFS

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END OF COMPILATION: NO DIAGNOSTICS.

2 MAP-X CYLIND-CVLEEM
MAP 0015-10/22-17:10 -(10)

1. LIB PLY-PLATE LIBRARY.

ADDRESS LIMITS 001000 036360 040000 065236
STARTING ADDRESS 035206
WORDS DECIMAL 15009 IBANK 10911 ORANK

SEGMENT MAIN				001000 036360	040000 065236
MSUTCS/FOR	1	001000 001021			
MSULKS/FOR	1	001022 001007			
MSWMS/FOR	1	001050 001126	2	040000 040011	
MSUFS/FOR	1	001127 001320	2	040012 040031	
MSFCHS/FOR	1	001321 001610	2	040032 040070	
MSWTS/FOR	1	001611 002057	2	040071 040156	
MSLOS/FOR	1	002058 002213	2	040157 040203	
MSFCOS/FOR	1	002214 002261	2	040204 040245	
MSFV/FOR	1	002262 002310	2	040246 040287	
MSOCVS/FOR	1	002311 002400	2	040288 040329	
MSFVS/FOR	1	002401 002467	2	040330 040371	
MSULKS/FOR	1	002468 002613			
MSSBL/FOR	1	002614 002651			
MSPBS/FOR	1	002652 002705			
MSFVS/FOR	1	002706 002715	2	042517 042537	
MSFVS/FOR	1	002716 002715	2	042538 042561	
MSFVS/FOR	1	002716 002715	2	042562 042600	
MSFVS/FOR	1	002716 002715	2	042601 042655	
MSFVS/FOR	1	002716 002715	2	042656 043005	
MSFVS/FOR	1	002716 002715	4	043006 043056	
MSFVS/FOR	1	002716 002715	2	043057 043115	
MSFVS/FOR	1	002716 002715	U	043116 043116	
MSFVS/FOR	1	002716 002715	C	043117 043120	
MSFVS/FOR	1	002716 002715	C	043121 043122	
MSFVS/FOR	1	002716 002715	2	043123 043132	
MSFVS/FOR	1	002716 002715	2	043133 043135	
MSFVS/FOR	1	002716 002715	2	043136 043165	
MSFVS/FOR	1	002716 002715			

NOTIFS/FORMC	1	C06720	007237	2	043166	043174
TANS/FOR	1	007240	007257	2	043175	043201
WSTOPS/FORMC	1	007260	007311	2	043202	043207
WTRUS/FOR	1	007312	007363	2	043210	043263
WTRUS/FORMC	1	007364	007612	2	043264	043311
WTRUS/FOR	1	007613	007674	2	043412	043443
WTRUS/FORMC	1	007675	007745	2	043444	043453
WTRUS/FOR	1	007746	010077	2	043454	043474
WTRUS/FORMC	1	010100	010142	2	043475	043500
WTRUS/FOR	1	010143	010221	2	043501	043622
WTRUS/FORMC	1	010222	010253	2	043623	043772
WTRUS/FOR	1	010254	010630	0	043723	045071
WTRUS/FORMC	1	010631	011524	0	045072	045100
WTRUS/FOR	1	011525	012035	2	045101	045162
WTRUS/FORMC	1	012036	012577	2	045163	045324
WTRUS/FOR	1	012578	012754	2	045325	045370
WTRUS/FORMC	1	012755	013372	2	045371	045371
WTRUS/FOR	1	013373	013565	2	045372	045432
WTRUS/FORMC	1	013566	013752	2	045433	045433
WTRUS/FOR	1	013753	014500	2	045434	047025
WTRUS/FORMC	1	014501	015762	2	047026	047078
WTRUS/FOR	1	015763	016041	2	047079	047340
WTRUS/FORMC	1	016042	016263	2	047341	047425
WTRUS/FOR	1	016264	016291	2	047426	047600
WTRUS/FORMC	1	016292	016357	2	047601	047607
WTRUS/FOR	1	016358	017335	2	047608	047610
WTRUS/FORMC	1	017336	017650	2	047611	047660
WTRUS/FOR	1	017651	017723	2	047661	047667
WTRUS/FORMC	1	017724	020141	2	047668	047670
WTRUS/FOR	1	020142	020224	2	047671	047676
WTRUS/FORMC	1	020225	020304	2	047677	047680
WTRUS/FOR	1	020305	020306	2	047681	047686
WTRUS/FORMC	1	020307	020308	2	047687	047690
WTRUS/FOR	1	020309	020310	2	047691	047696
WTRUS/FORMC	1	020311	020312	2	047697	047700
WTRUS/FOR	1	020313	020314	2	047701	047706
WTRUS/FORMC	1	020315	020316	2	047707	047710
WTRUS/FOR	1	020317	020318	2	047711	047716
WTRUS/FORMC	1	020319	020320	2	047717	047720
WTRUS/FOR	1	020321	020322	2	047721	047726
WTRUS/FORMC	1	020323	020324	2	047727	047730
WTRUS/FOR	1	020325	020326	2	047731	047736
WTRUS/FORMC	1	020327	020328	2	047737	047740
WTRUS/FOR	1	020329	020330	2	047741	047746
WTRUS/FORMC	1	020331	020332	2	047747	047750
WTRUS/FOR	1	020333	020334	2	047751	047756
WTRUS/FORMC	1	020335	020336	2	047757	047760
WTRUS/FOR	1	020337	020338	2	047761	047766
WTRUS/FORMC	1	020339	020340	2	047767	047770
WTRUS/FOR	1	020341	020342	2	047771	047776
WTRUS/FORMC	1	020343	020344	2	047777	047780
WTRUS/FOR	1	020345	020346	2	047781	047786
WTRUS/FORMC	1	020347	020348	2	047787	047790
WTRUS/FOR	1	020349	020350	2	047791	047796
WTRUS/FORMC	1	020351	020352	2	047797	047800
WTRUS/FOR	1	020353	020354	2	047801	047806
WTRUS/FORMC	1	020355	020356	2	047807	047810
WTRUS/FOR	1	020357	020358	2	047811	047816
WTRUS/FORMC	1	020359	020360	2	047817	047820
WTRUS/FOR	1	020361	020362	2	047821	047826
WTRUS/FORMC	1	020363	020364	2	047827	047830
WTRUS/FOR	1	020365	020366	2	047831	047836
WTRUS/FORMC	1	020367	020368	2	047837	047840
WTRUS/FOR	1	020369	020370	2	047841	047846
WTRUS/FORMC	1	020371	020372	2	047847	047850
WTRUS/FOR	1	020373	020374	2	047851	047856
WTRUS/FORMC	1	020375	020376	2	047857	047860
WTRUS/FOR	1	020377	020378	2	047861	047866
WTRUS/FORMC	1	020379	020380	2	047867	047870
WTRUS/FOR	1	020381	020382	2	047861	047866
WTRUS/FORMC	1	020383	020384	2	047867	047870
WTRUS/FOR	1	020385	020386	2	047871	047876
WTRUS/FORMC	1	020387	020388	2	047877	047880
WTRUS/FOR	1	020389	020390	2	047881	047886
WTRUS/FORMC	1	020391	020392	2	047887	047890
WTRUS/FOR	1	020393	020394	2	047891	047896
WTRUS/FORMC	1	020395	020396	2	047897	047900
WTRUS/FOR	1	020397	020398	2	047901	047906
WTRUS/FORMC	1	020399	020400	2	047907	047910
WTRUS/FOR	1	020401	020402	2	047911	047916
WTRUS/FORMC	1	020403	020404	2	047917	047920
WTRUS/FOR	1	020405	020406	2	047911	047916
WTRUS/FORMC	1	020407	020408	2	047917	047920
WTRUS/FOR	1	020409	020410	2	047921	047926
WTRUS/FORMC	1	020411	020412	2	047927	047930
WTRUS/FOR	1	020413	020414	2	047921	047926
WTRUS/FORMC	1	020415	020416	2	047927	047930
WTRUS/FOR	1	020417	020418	2	047931	047936
WTRUS/FORMC	1	020419	020420	2	047937	047940
WTRUS/FOR	1	020421	020422	2	047931	047936
WTRUS/FORMC	1	020423	020424	2	047937	047940
WTRUS/FOR	1	020425	020426	2	047931	047936
WTRUS/FORMC	1	020427	020428	2	047937	047940
WTRUS/FOR	1	020429	020430	2	047931	047936
WTRUS/FORMC	1	020431	020432	2	047937	047940
WTRUS/FOR	1	020433	020434	2	047931	047936
WTRUS/FORMC	1	020435	020436	2	047937	047940
WTRUS/FOR	1	020437	020438	2	047931	047936
WTRUS/FORMC	1	020439	020440	2	047937	047940
WTRUS/FOR	1	020441	020442	2	047931	047936
WTRUS/FORMC	1	020443	020444	2	047937	047940
WTRUS/FOR	1	020445	020446	2	047931	047936
WTRUS/FORMC	1	020447	020448	2	047937	047940
WTRUS/FOR	1	020449	020450	2	047931	047936
WTRUS/FORMC	1	020451	020452	2	047937	047940
WTRUS/FOR	1	020453	020454	2	047931	047936
WTRUS/FORMC	1	020455	020456	2	047937	047940
WTRUS/FOR	1	020457	020458	2	047931	047936
WTRUS/FORMC	1	020459	020460	2	047937	047940
WTRUS/FOR	1	020461	020462	2	047931	047936
WTRUS/FORMC	1	020463	020464	2	047937	047940
WTRUS/FOR	1	020465	020466	2	047931	047936
WTRUS/FORMC	1	020467	020468	2	047937	047940
WTRUS/FOR	1	020469	020470	2	047931	047936
WTRUS/FORMC	1	020471	020472	2	047937	047940
WTRUS/FOR	1	020473	020474	2	047931	047936
WTRUS/FORMC	1	020475	020476	2	047937	047940
WTRUS/FOR	1	020477	020478	2	047931	047936
WTRUS/FORMC	1	020479	020480	2	047937	047940
WTRUS/FOR	1	020481	020482	2	047931	047936
WTRUS/FORMC	1	020483	020484	2	047937	047940
WTRUS/FOR	1	020485	020486	2	047931	047936
WTRUS/FORMC	1	020487	020488	2	047937	047940
WTRUS/FOR	1	020489	020490	2	047931	047936
WTRUS/FORMC	1	020491	020492	2	047937	047940
WTRUS/FOR	1	020493	020494	2	047931	047936
WTRUS/FORMC	1	020495	020496	2	047937	047940
WTRUS/FOR	1	020497	020498	2	047931	047936
WTRUS/FORMC	1	020499	020500	2	047937	047940
WTRUS/FOR	1	020501	020502	2	047931	047936
WTRUS/FORMC	1	020503	020504	2	047937	047940
WTRUS/FOR	1	020505	020506	2	047931	047936
WTRUS/FORMC	1	020507	020508	2	047937	047940
WTRUS/FOR	1	020509	020510	2	047931	047936
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WTRUS/FOR	1	020513	020514	2	047931	047936
WTRUS/FORMC	1	020515	020516	2	047937	047940
WTRUS/FOR	1	020517	020518	2	047931	047936
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WTRUS/FORMC	1	020543	020544	2	047937	047940
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WTRUS/FORMC	1	020547	020548	2	047937	

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LE006/6060	1	020707	021025	0	050275 050312
GR106/6060	1	021026	022306	2	BLANKSCOMMON
SUBJ6/6060	1	022307	022727	0	050313 050326
OBJCT6/6060	1	022730	023325	2	BLANKSCOMMON
PAGE66/6060	1	023326	023553	0	050327 050445
VEC166/6060	1	023554	023656	2	BLANKSCOMMON
FONT12/6060	1	023657	023712	0	050446 050505
FONT26/6060	1	023713	024077	0	050506 050563
UNSC22/6060	1	024100	024237	2	BLANKSCOMMON
LINES6/6060	1	024240	024547	0	050564 050624
SCALE22/6060	1	024550	025013	2	BLANKSCOMMON
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GETSM6/6060	1	027115	027450	0	051376 051424
MAIN (COMMON BLOCK)				2	051425 051621
PLCTS (COMMON BLOCK)				0	051622 051722
ARR2 (COMMON BLOCK)				0	051723 051822
IDINFO (COMMON BLOCK)				0	051823 051922
BLANKSCOMMON (COMMON BLOCK)				0	051923 052022
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ORTH2R	1	027451	030076	0	052123 052222
POINTR	1	030077	030513	0	052223 052322
TEMP3R	1	030514	033747	0	052323 052422
TEMP2R	1	033750	035285	0	052423 052522
CYLE2R	1	035286	036360	0	052523 052622
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PAGE 1

EXPERIMENT NUMBER 2-17.
NWC CODE 4841 CYLEX

PIRMO DATE 8 JANUARY 1988.
MAGNIFICATION = .986
OUTSIDE RADIUS = 16.31MM

METAL CS(OPMC)

PIRMO BY C. T. MITCHELL.
WRITING RATE = 1.487(MM/USEC)
INSIDE RADIUS = 12.79MM

C/N = .4193

D = 7.697 MM/USECS

RMOM = 8.9800/CC

EXPLOSIVE PRXM-101

RHOC = 1.7000/CC

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PAGE 2

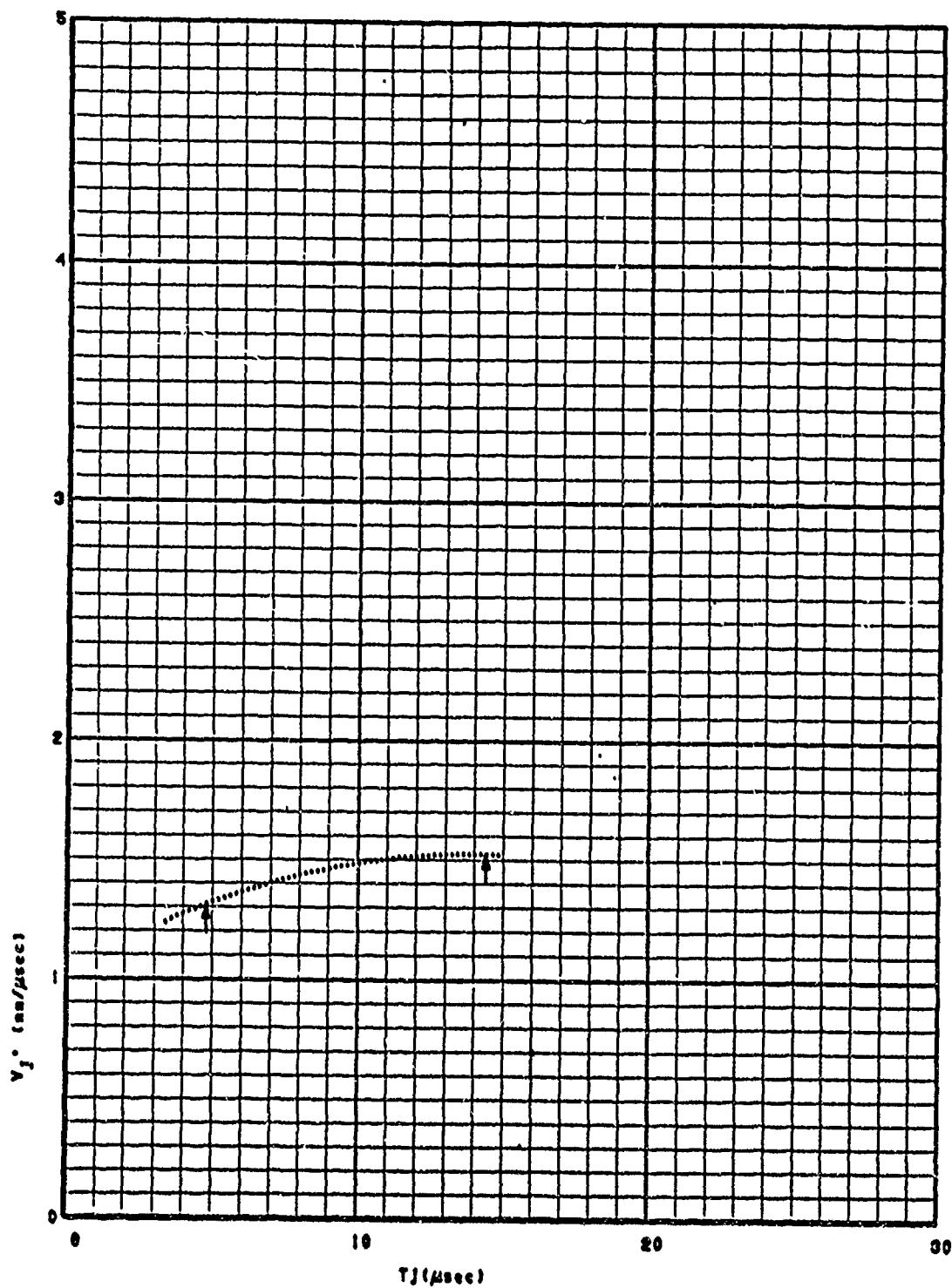
TI (USECS)	RI (MM)	TJ (USECS)	RJ (MM)	TBJ (MM)	RJ (MM)	VJ (MM/USEC)	ALPHA (MM/USEC)	MINJ (MM)	VOLJ/VOLB
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7.41003	23.90237	7.41003	23.90237	57.07194	23.91975	1.41975	2.42152	22.31050	3.00832
7.61023	24.18952	7.61523	24.18952	58.18752	24.18767	1.42634	2.43286	22.62360	3.17334
7.81563	24.48068	7.81563	24.48068	59.35691	24.46335	1.43273	2.44385	22.92957	3.25975
8.01603	24.77386	8.01603	24.77386	61.55940	24.75709	1.43931	2.45448	23.23639	3.34757
8.21643	25.06402	8.21643	25.06402	63.24148	25.04605	1.44404	2.46475	23.54403	3.43680
8.41683	25.34514	8.41683	25.34514	64.78037	25.32619	1.44855	2.47467	23.85243	3.52743
8.61723	25.63932	8.61723	25.63932	66.32645	25.62462	1.45521	2.48424	24.16161	3.61946
8.81764	25.92847	8.81764	25.92847	67.86934	25.91403	1.46156	2.49345	24.47143	3.71290
9.01804	26.20960	9.01804	26.20960	69.41182	26.21325	1.46671	2.50230	24.78206	3.80774
9.21844	26.49486	9.21844	26.49486	70.95431	26.50767	1.47165	2.51080	25.09329	3.90390
9.41924	26.78079	9.41924	26.78079	72.49679	26.80307	1.47638	2.51895	25.40514	4.00162
9.61964	27.06116	9.61964	27.06116	74.03927	27.09740	1.48090	2.52673	25.71757	4.10065
9.82004	27.34337	9.82004	27.34337	75.58176	27.39651	1.48522	2.53416	26.03057	4.20107
10.02044	27.62550	10.02044	27.62550	77.12425	27.69466	1.48933	2.54124	26.34408	4.30287
10.22084	27.90763	10.22084	27.90763	78.66673	27.99352	1.49323	2.54795	26.65808	4.40505
10.42124	28.18976	10.42124	28.18976	80.20922	28.29314	1.49693	2.55432	26.97254	4.50862
10.62164	28.47189	10.62164	28.47189	81.75170	28.59344	1.50042	2.56033	27.28742	4.61355
10.82204	28.75402	10.82204	28.75402	83.29414	28.89449	1.50377	2.56598	27.60268	4.72344
11.02244	29.03615	11.02244	29.03615	84.83662	29.19515	1.50697	2.57127	27.91830	4.83248
11.22284	29.31828	11.22284	29.31828	86.37916	29.49640	1.50964	2.57621	28.23423	4.94247
11.42324	29.60041	11.42324	29.60041	87.92164	29.79745	1.51230	2.58079	28.55044	5.05300
11.62364	29.88254	11.62364	29.88254	89.46413	30.09845	1.51475	2.58502	28.86690	5.16446
11.82404	30.16467	11.82404	30.16467	91.00661	30.40030	1.51700	2.58888	29.18354	5.28043
12.02444	30.44680	12.02444	30.44680	92.54910	30.70252	1.51904	2.59240	29.50042	5.39572
12.22484	30.72893	12.22484	30.72893	94.09158	31.00474	1.52097	2.59553	29.81741	5.51230
12.42524	31.01106	12.42524	31.01106	95.63406	31.30697	1.52243	2.59835	30.13451	5.63016
12.62564	31.29319	12.62564	31.29319	97.17654	31.60920	1.52391	2.60079	30.45167	5.74930
12.82604	31.57532	12.82604	31.57532	98.71904	31.91143	1.52512	2.60288	30.76886	5.86953
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13.42724	32.42171	13.42724	32.42171	103.34648	32.81812	1.52751	2.60699	31.72027	6.23638
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13.82804	32.98597	13.82804	32.98597	106.43144	33.42258	1.52807	2.60795	32.35404	6.49047
14.02844	33.26810	14.02844	33.26810	107.97392	33.72481	1.52804	2.60789	32.67066	6.61772
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NWC TP 5240
PART 2

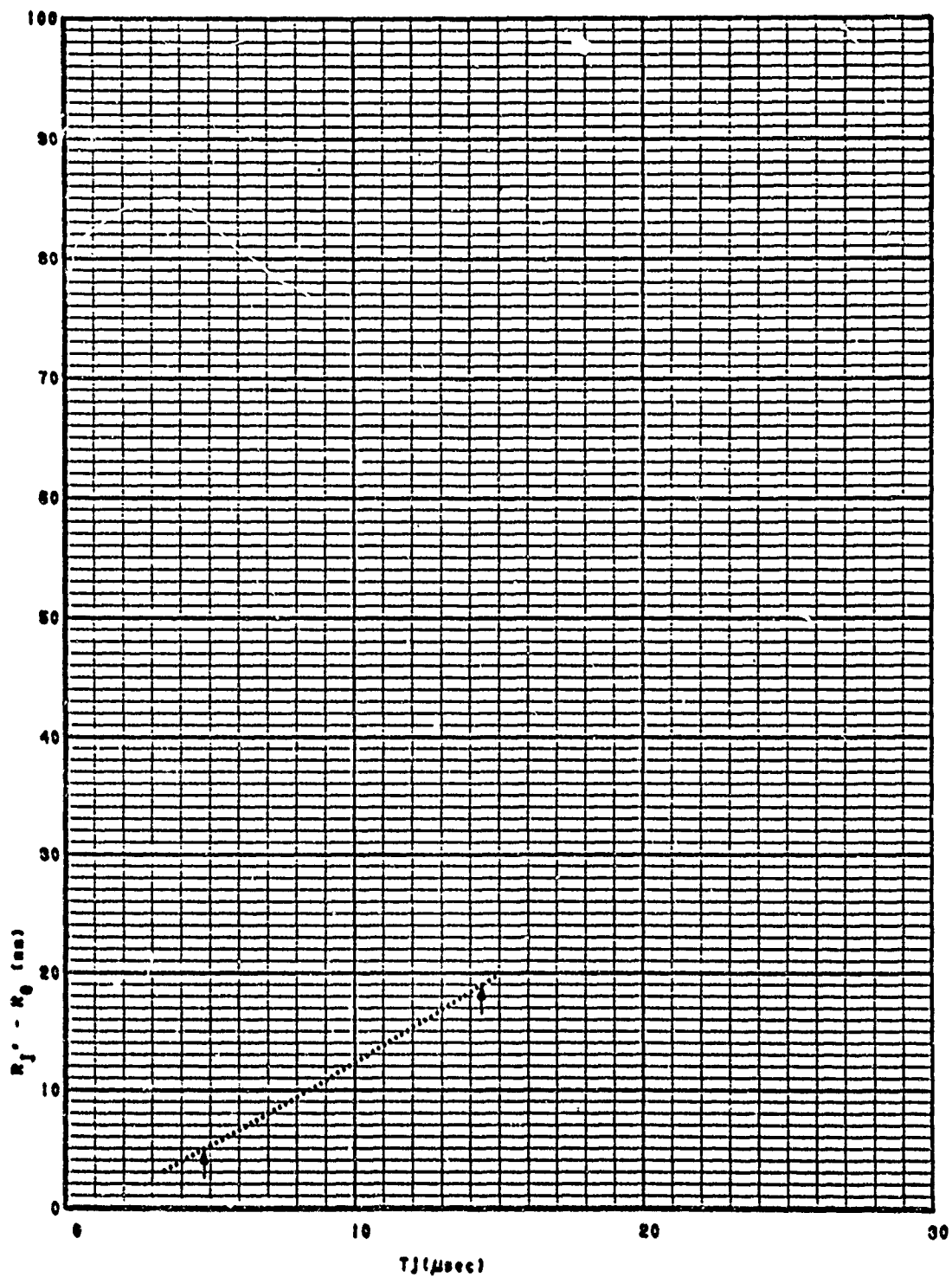
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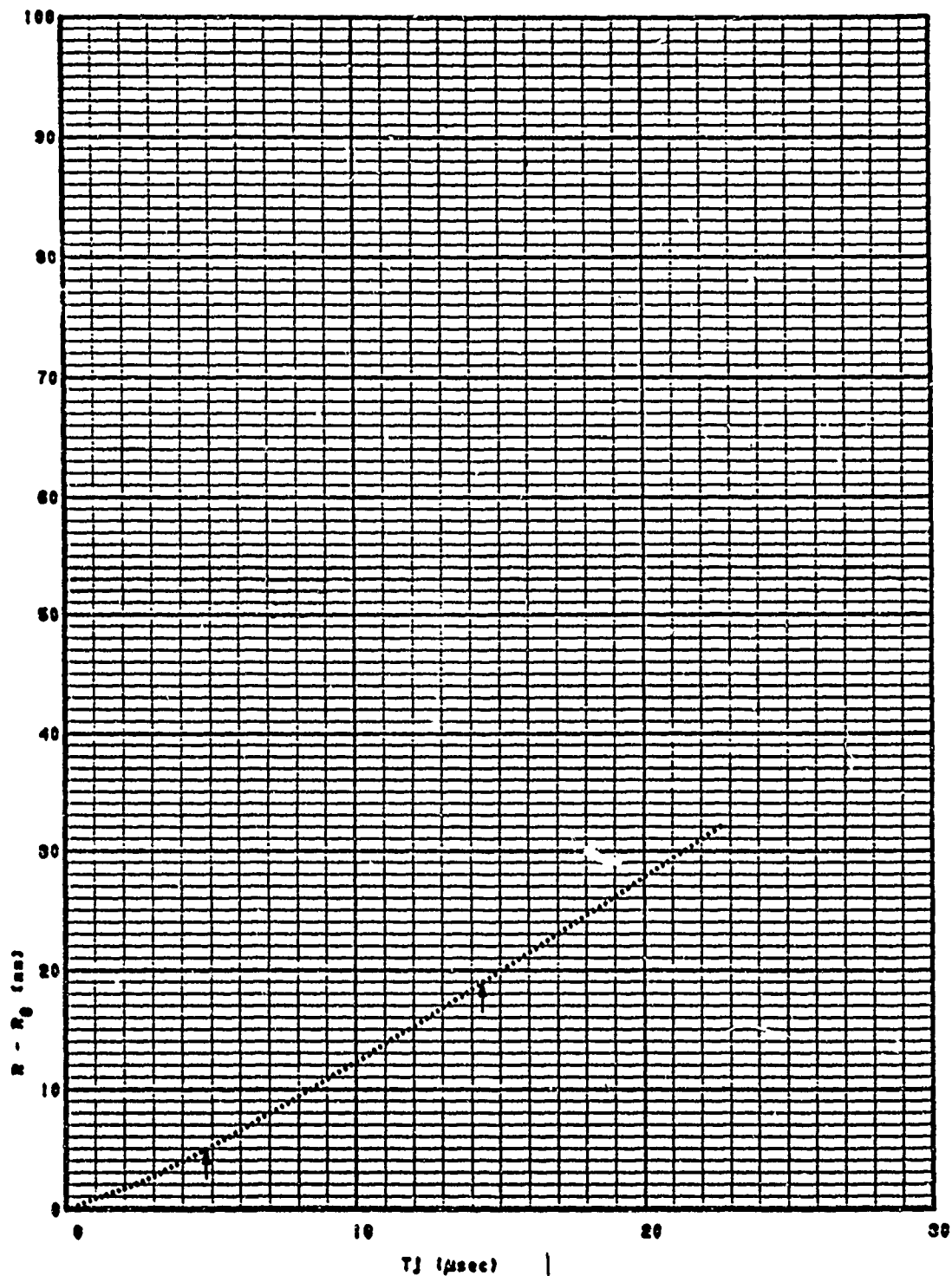


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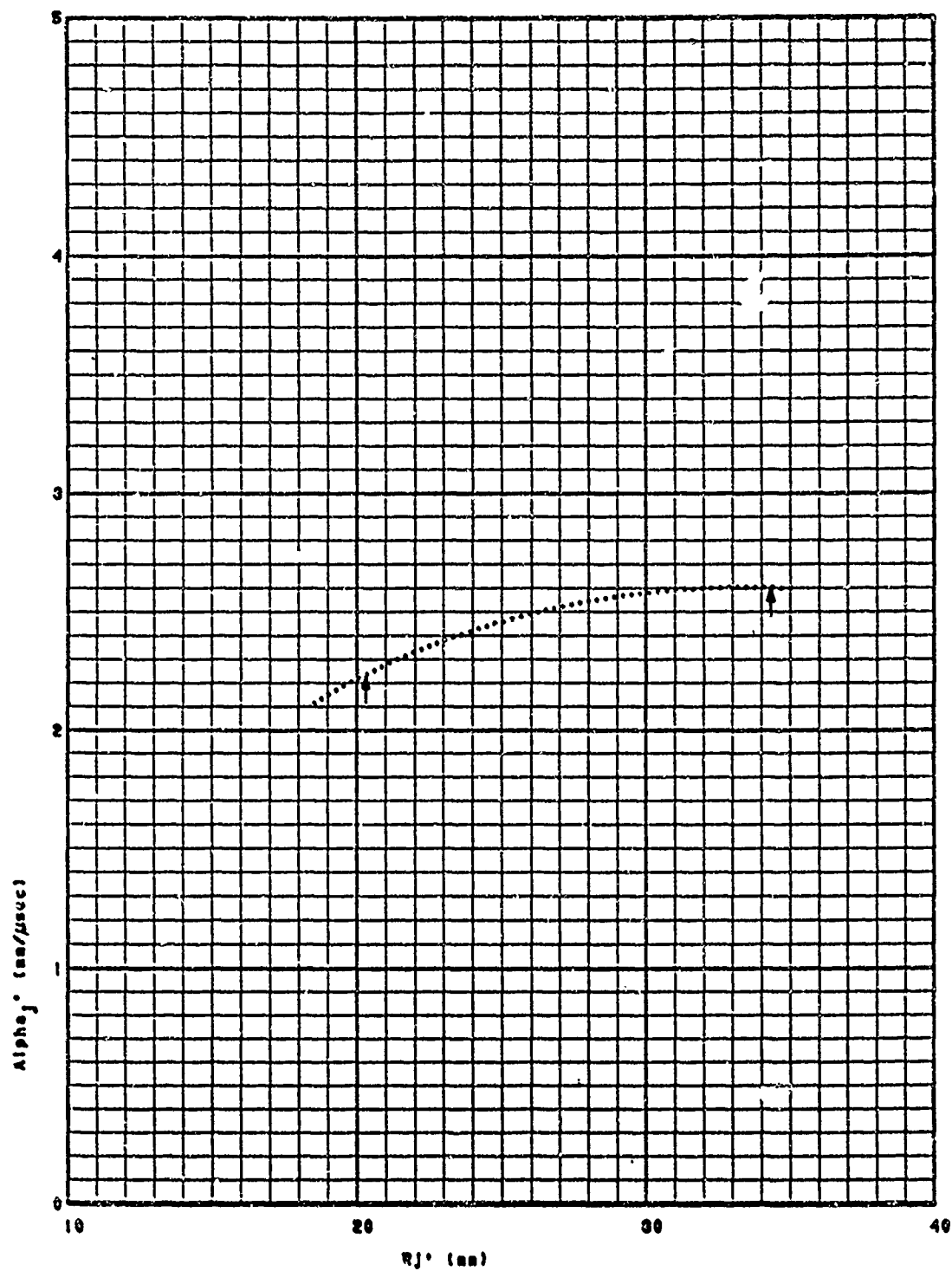


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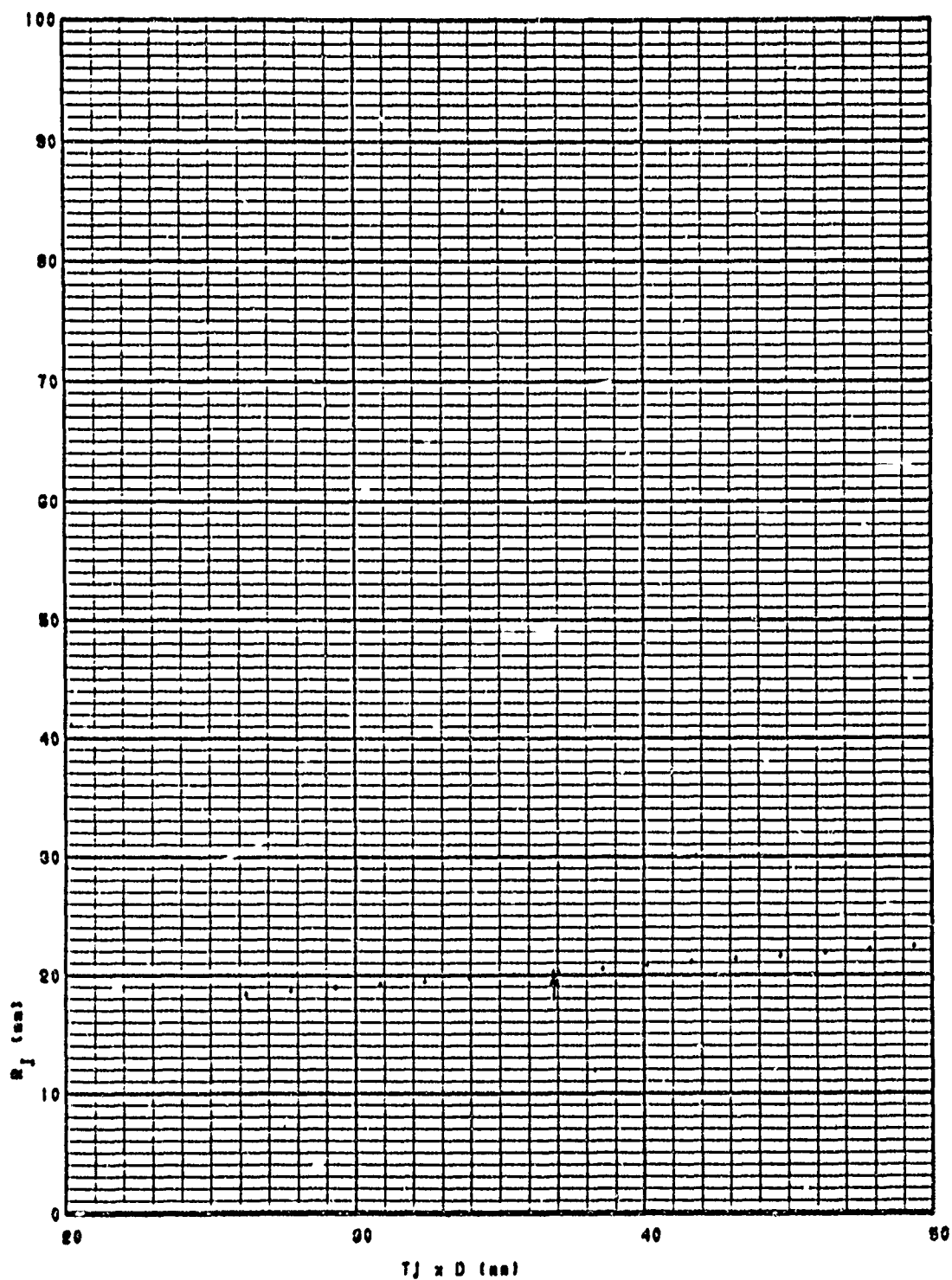
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NWC TP 5240
PART 2

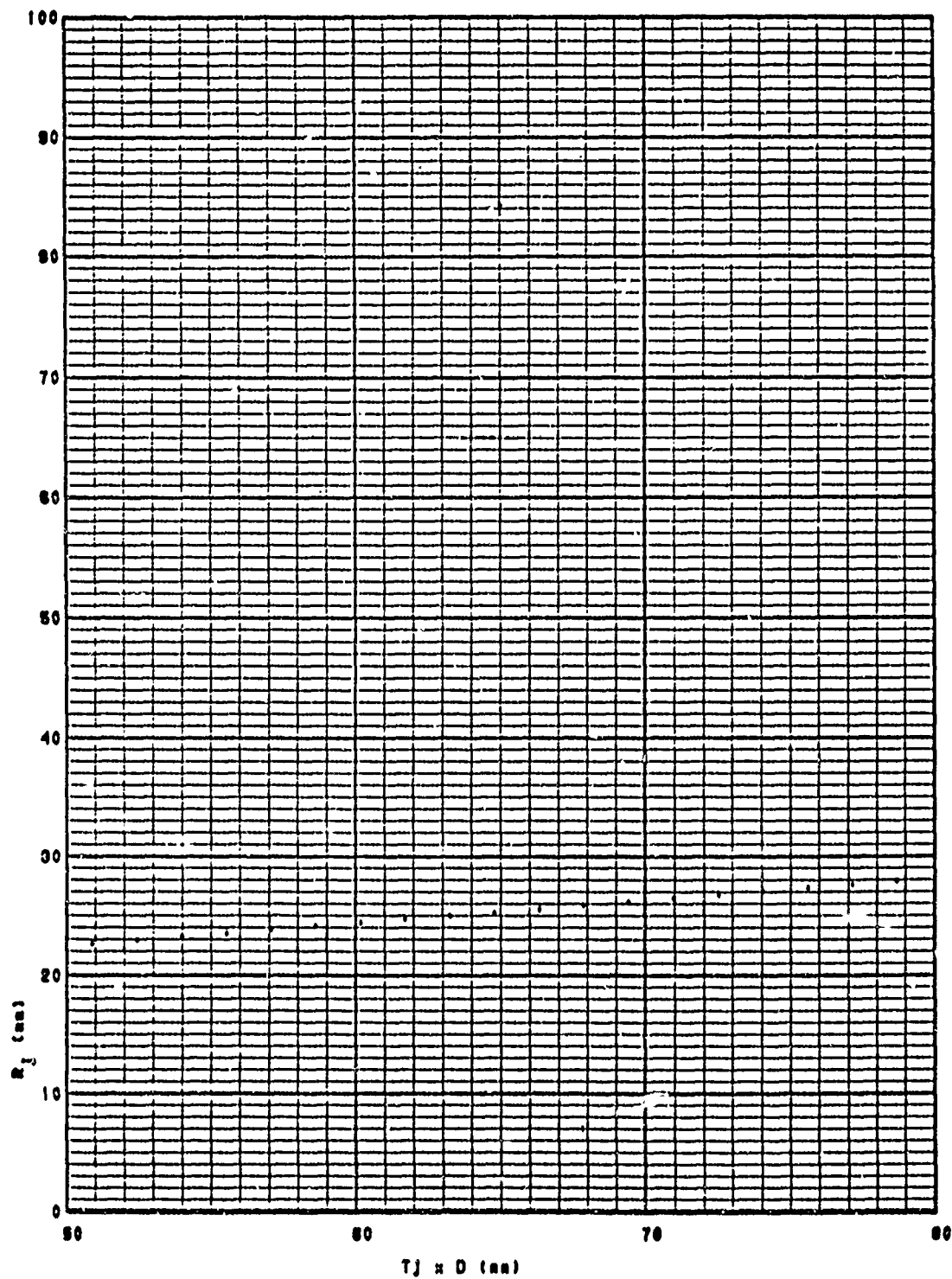
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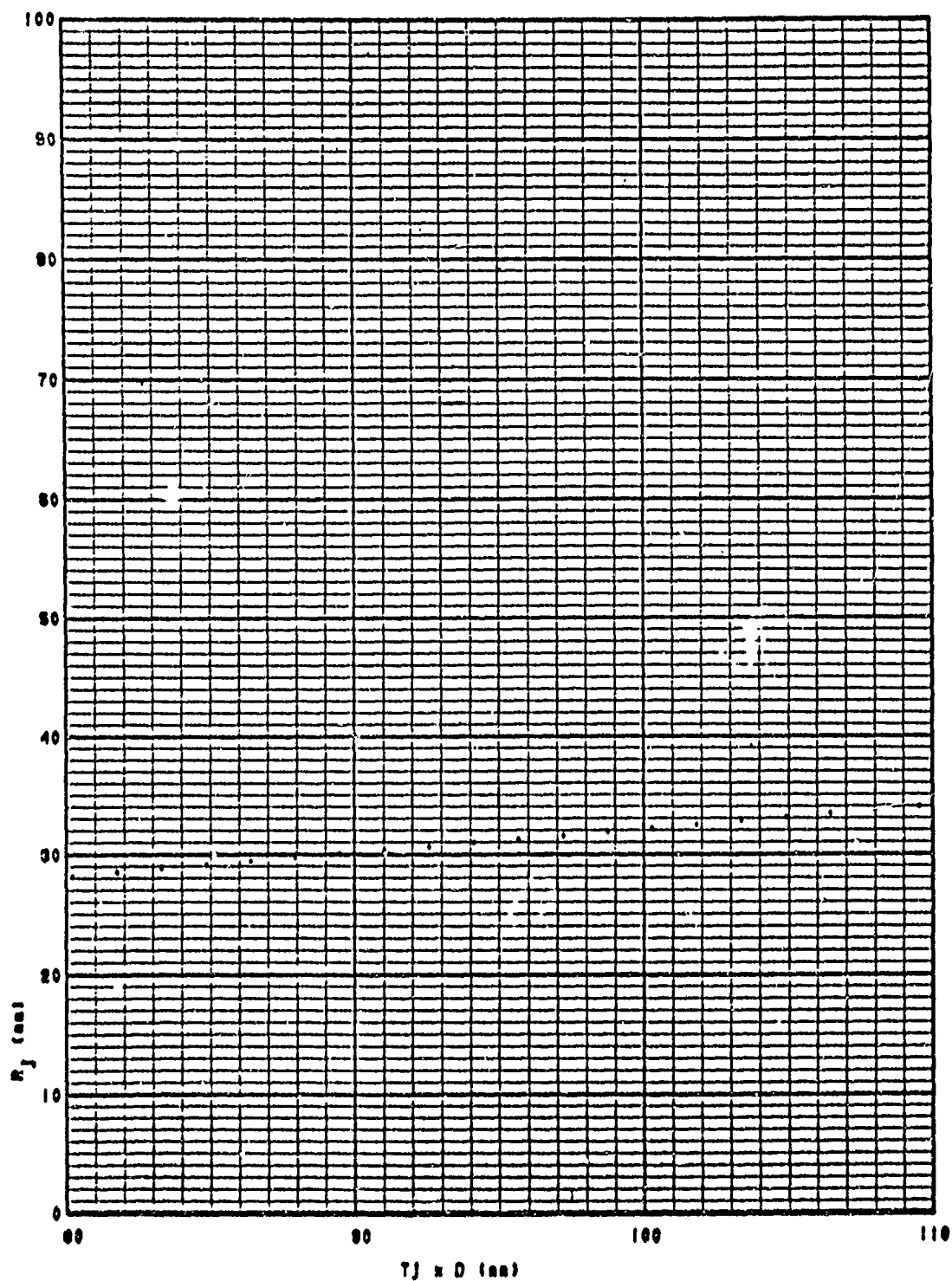
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PART 2

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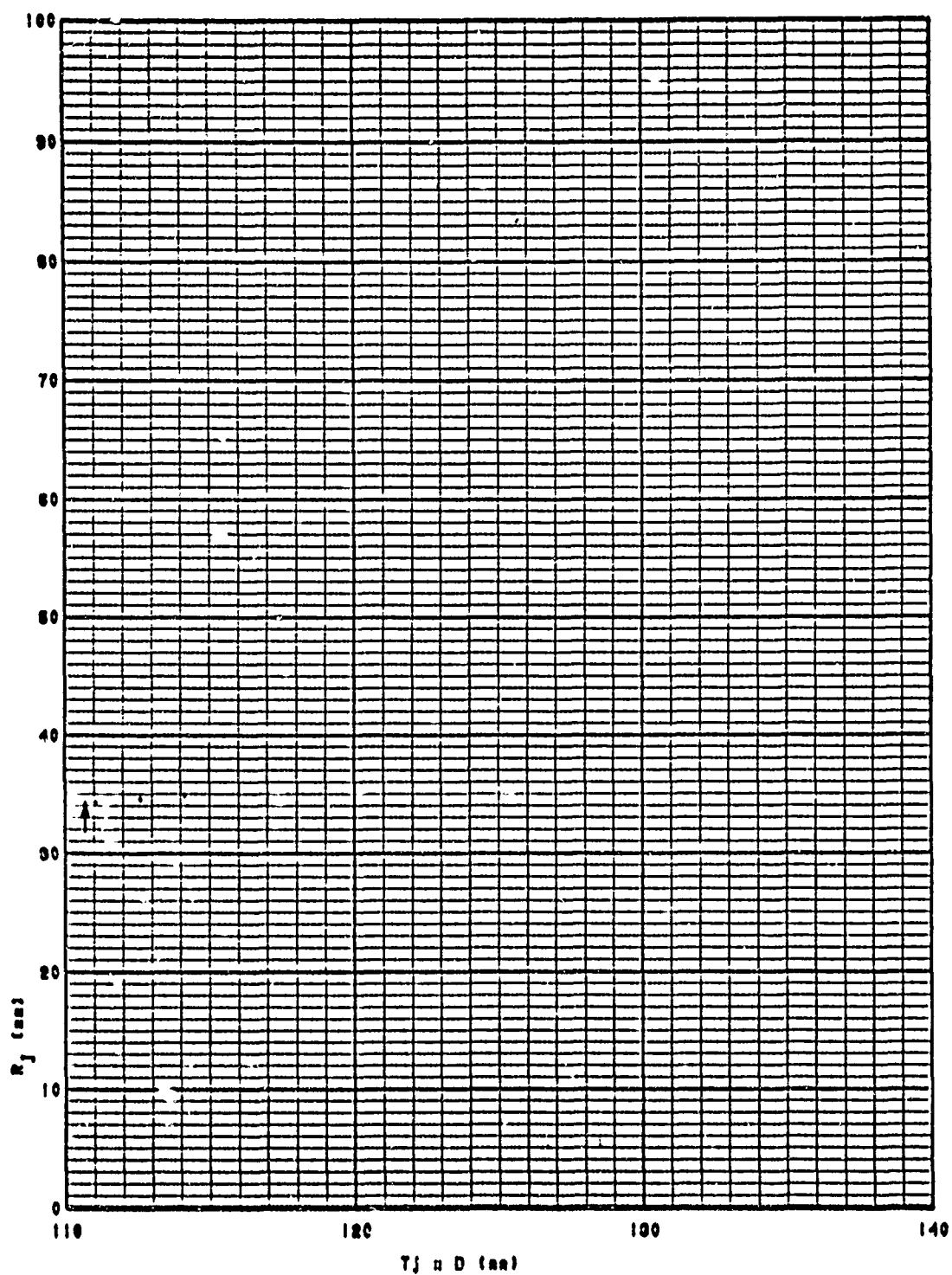


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EXPERIMENT NUMBER R-17.

DATE FIRED- 8 JANUARY 1968.



PAGE 1

EXPERIMENT NUMBER R-17.
MNC CODE 4501 CYLEX

FIRING DATE 8 JANUARY 1968.
MAGNIFICATION = .9960
OUTSIDE RADIUS = 15.31MM

FIRING BY C. T. MITCHELL.
WRITING RATE = 1.491MM/USEC
INSIDE RADIUS = 12.70MM

B = 7.637 MM/USECS
RWOC = 1.7006/CC

EXPLOSIVE POIN-102

RWOM = 8.9606/CC

MEAL CU(OFMC)

TI (USECS)	RI (MM)	TJ (USECS)	PJ (MM)	TOJ (MM)	RJ* (MM)	VJ* (MM/USEC)	ALPHA* (MM/USEC)	RIMJ* (MM)	VOLJ*/VOL0
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-00080	15.65680		18.81704	27.76473	18.79303	1.24565	2.12257	16.73981	1.73721
-00120	15.87829		19.06495	29.30721	19.04368	1.25575	2.13969	17.01993	1.79601
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PAGE 2

TI (USBC)	RI (MM)	TJ (USBC)	RJ (MM)	TDJ (MM)	RJ (MM)	VJ (MM/USBC)	ALPHA (MM/USBC)	SINJ (MM)	VOLJ/VOL0
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PAGE 3									
TI (USBCS)	RI (MM)	TJ (USBC)	RJ (MM)	BOTTOM TBJ (MM)	RJ (MM)	VJ (F/USBC)	ALPHA (MM/USBC)	RINJ (MM)	VOLJ/VOL0
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BOTTOM VALUES AT 10. MM									
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BOTTOM VALUES AT 15. MM									
		11.81443	20.30600	90.93004	30.30400	1.50701	2.57271		
BOTTOM VALUES AT 19. MM									
		14.44906	24.30600	111.21424	34.30500	1.52576	2.60397		
AVERAGE VALUES AT 5. MM									
		4.79034	20.30600	36.07124	20.30107	1.30042	2.32027		
AVERAGE VALUES AT 10. MM									
		9.41556	20.30600	64.77486	25.30886	1.44373	2.46270		
AVERAGE VALUES AT 15. MM									
		11.78464	20.30600	99.70029	30.30399	1.51193	2.58016		
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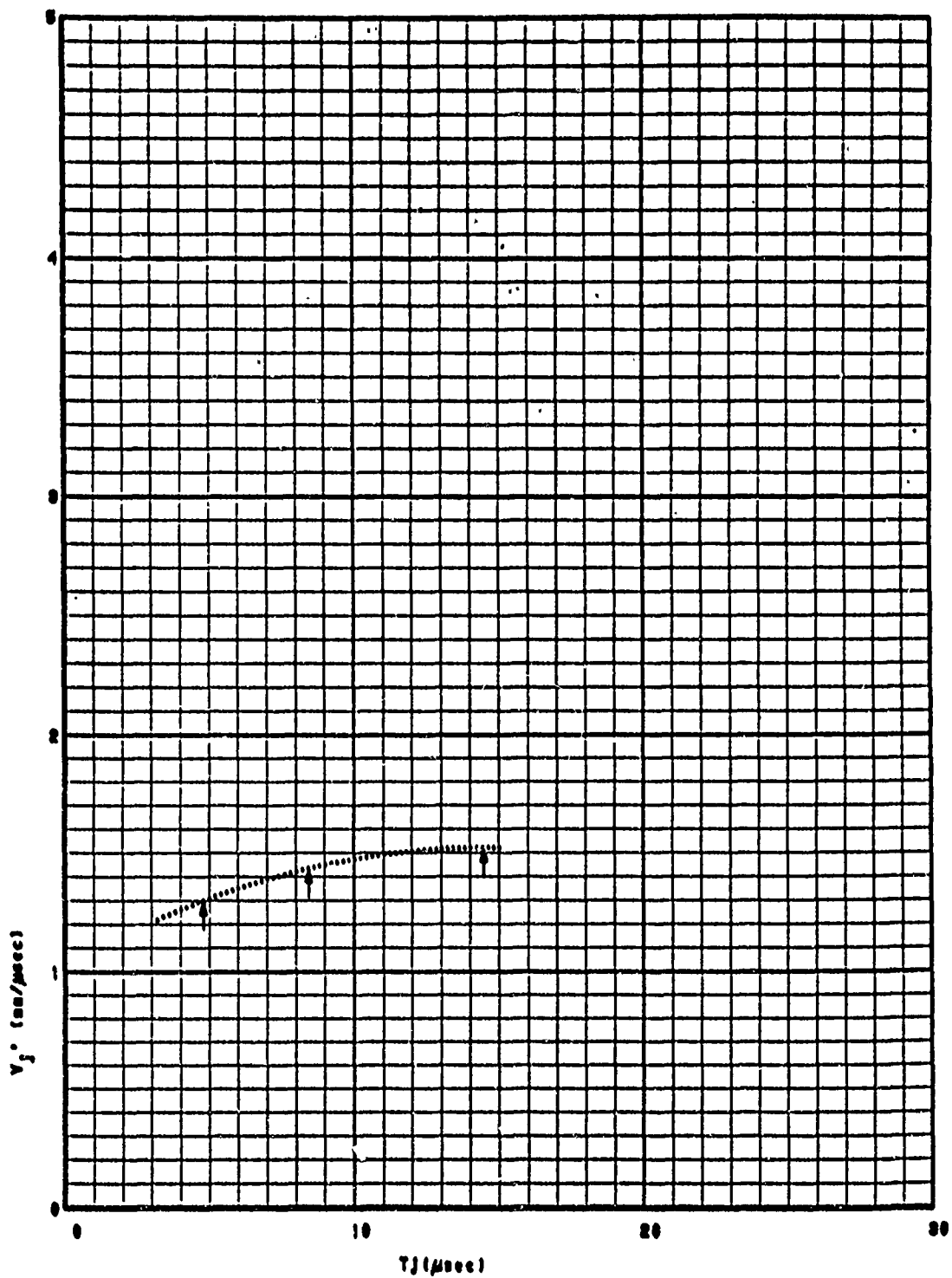
CYLINDER
WALL
VELOCITY
BOTTOM

↓ SURVEY CONSTANT (BOTTOM)

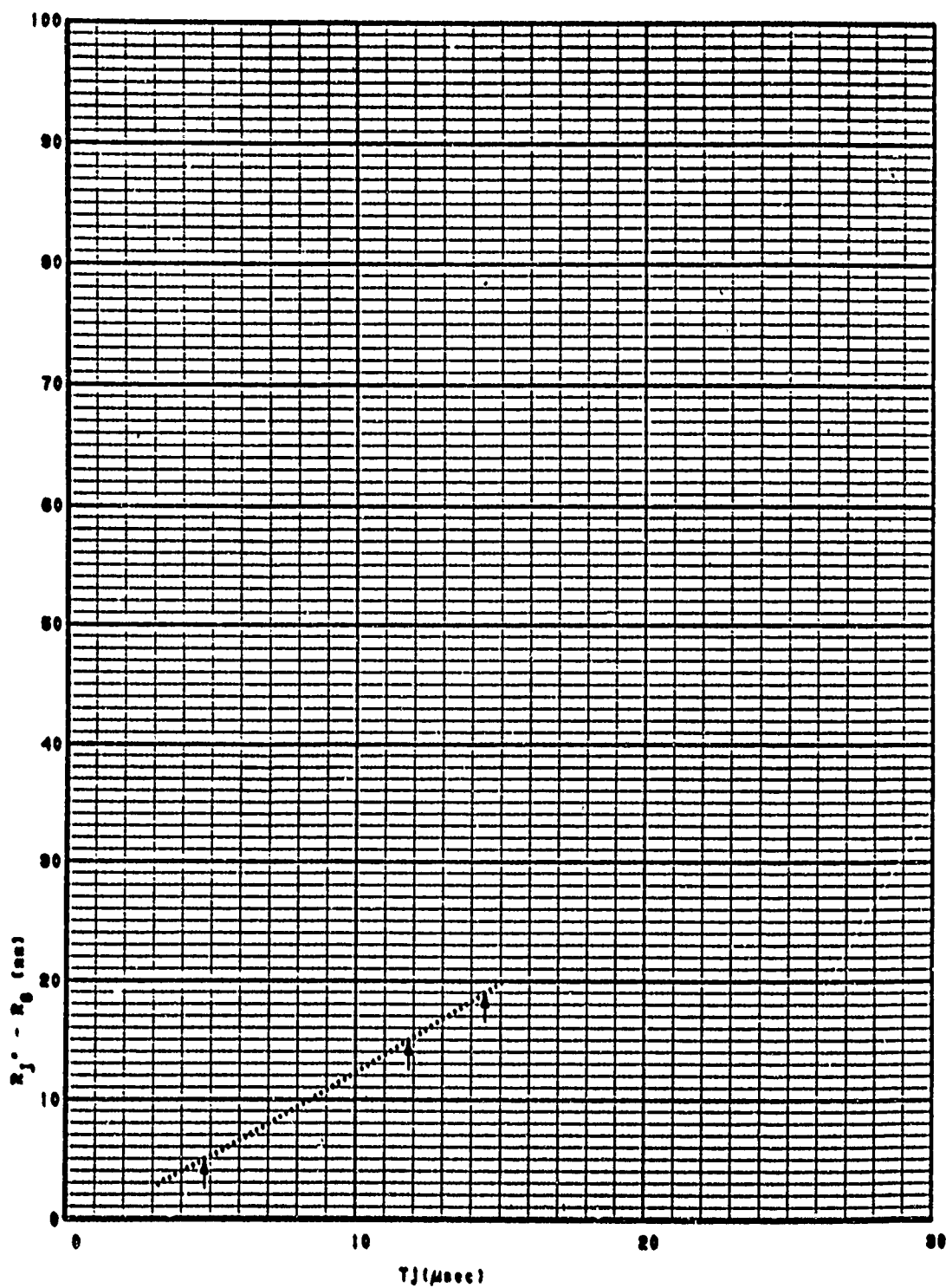
↓ SURVEY CONSTANT (AVER)

AVE VALUES
OF RADIAL
WALL VELOCITY

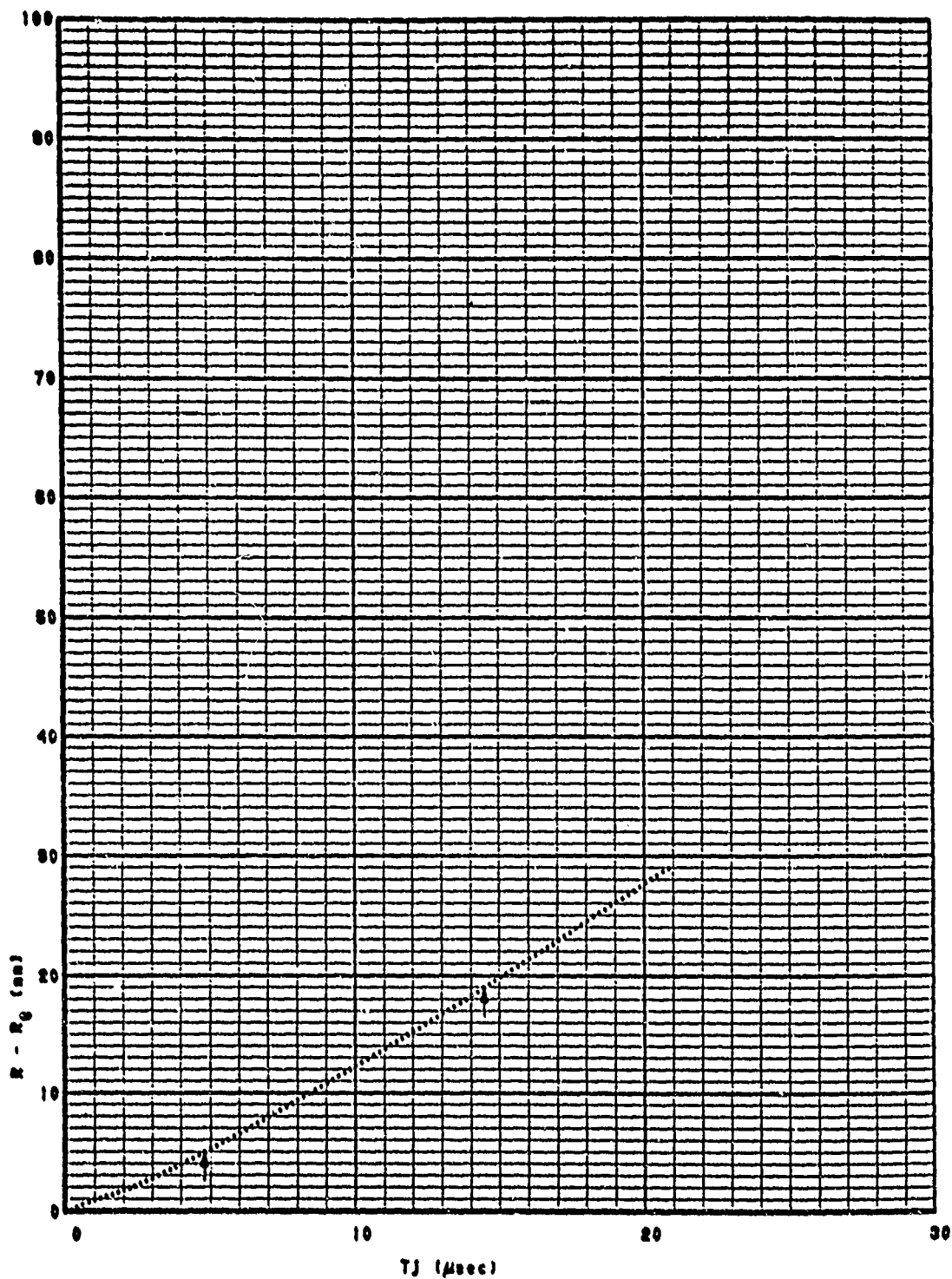
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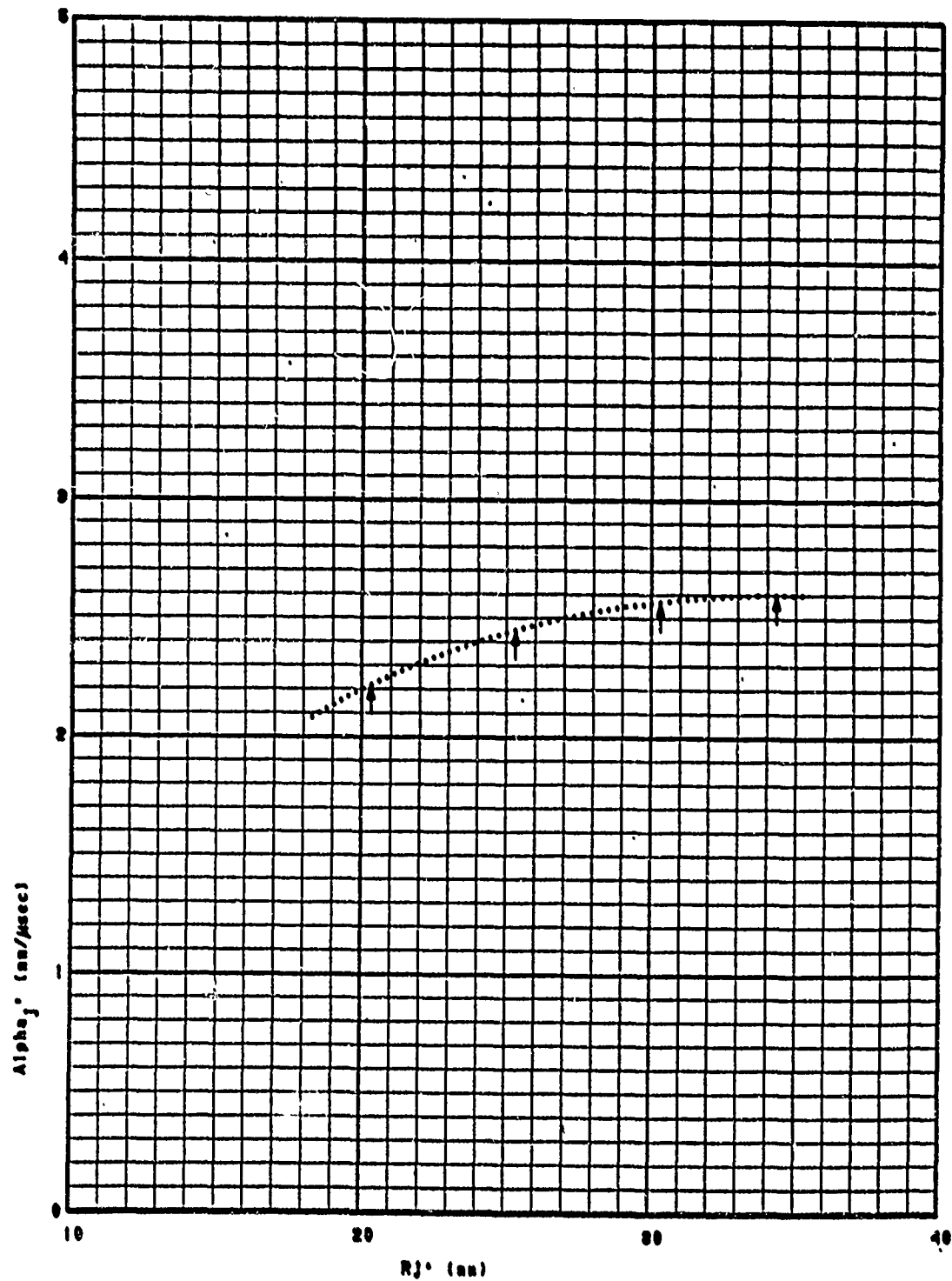


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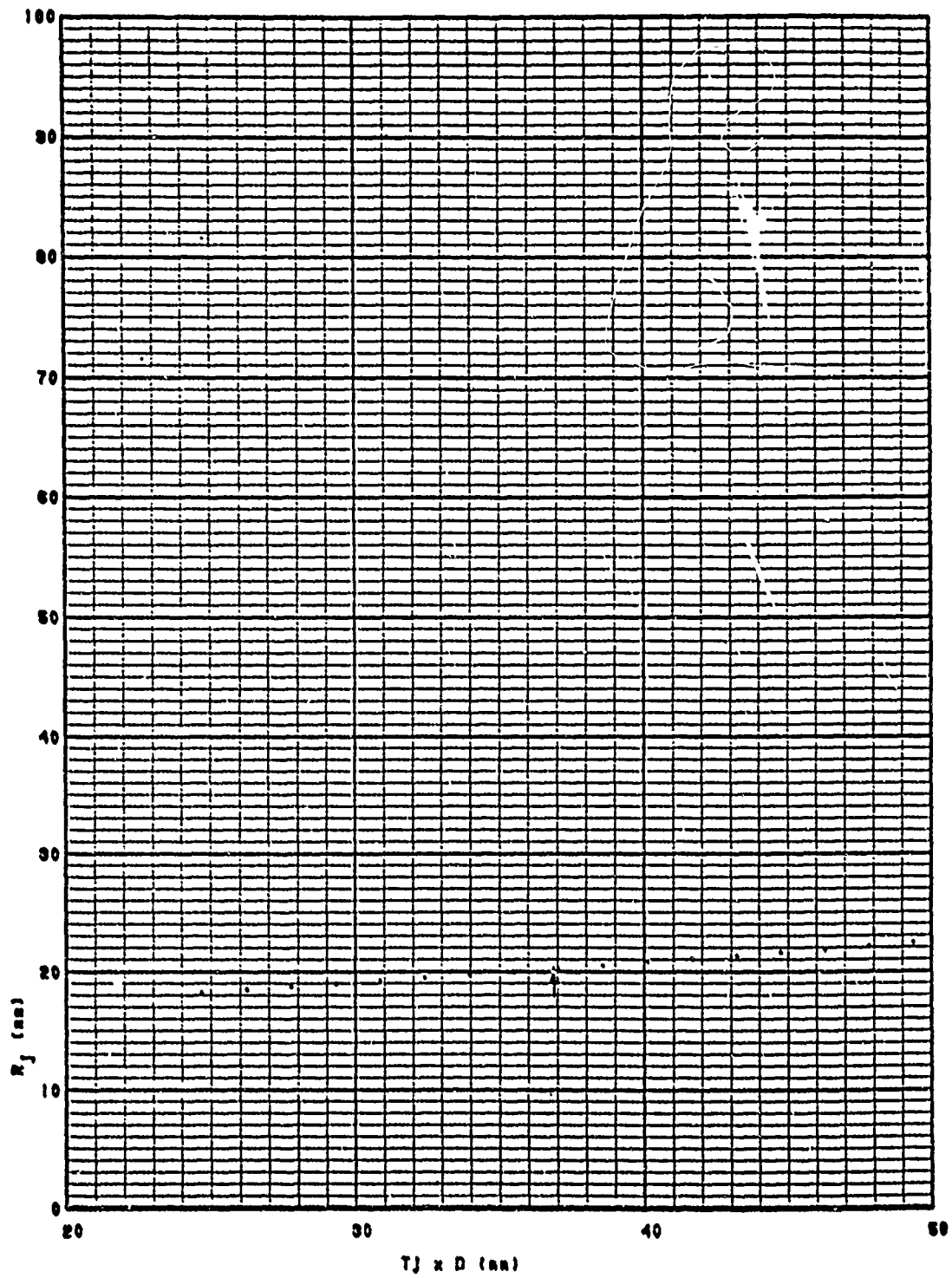


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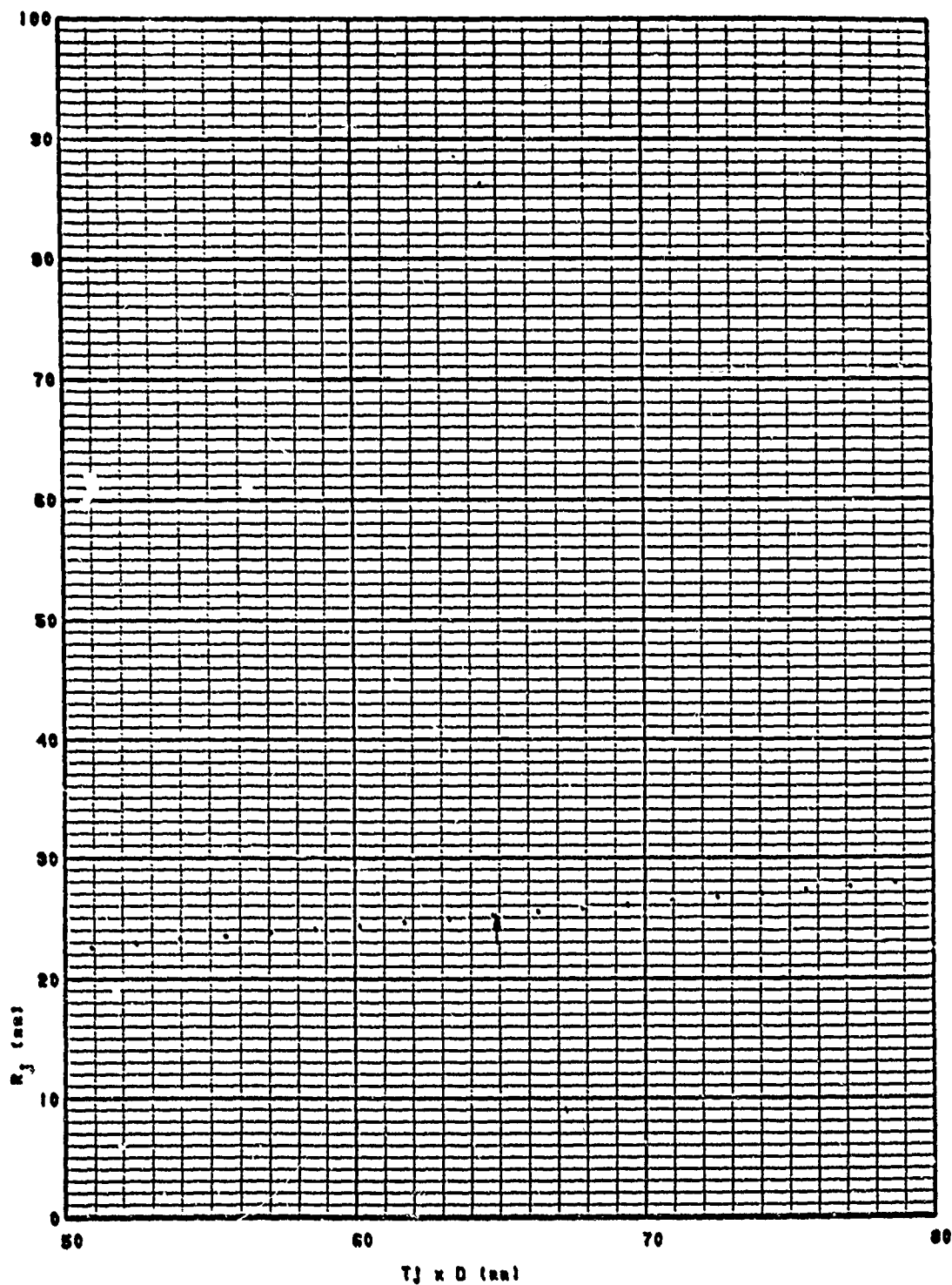
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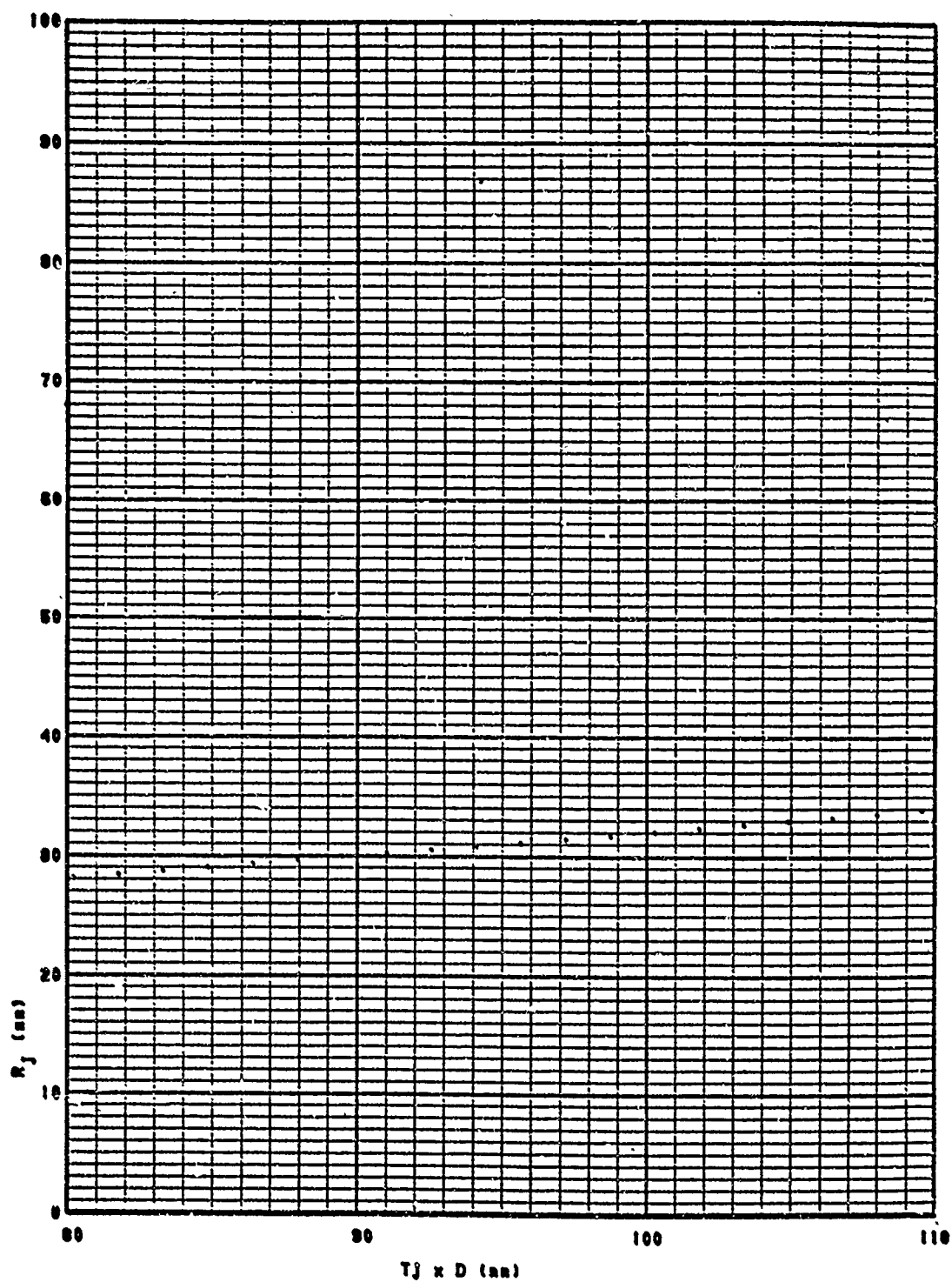


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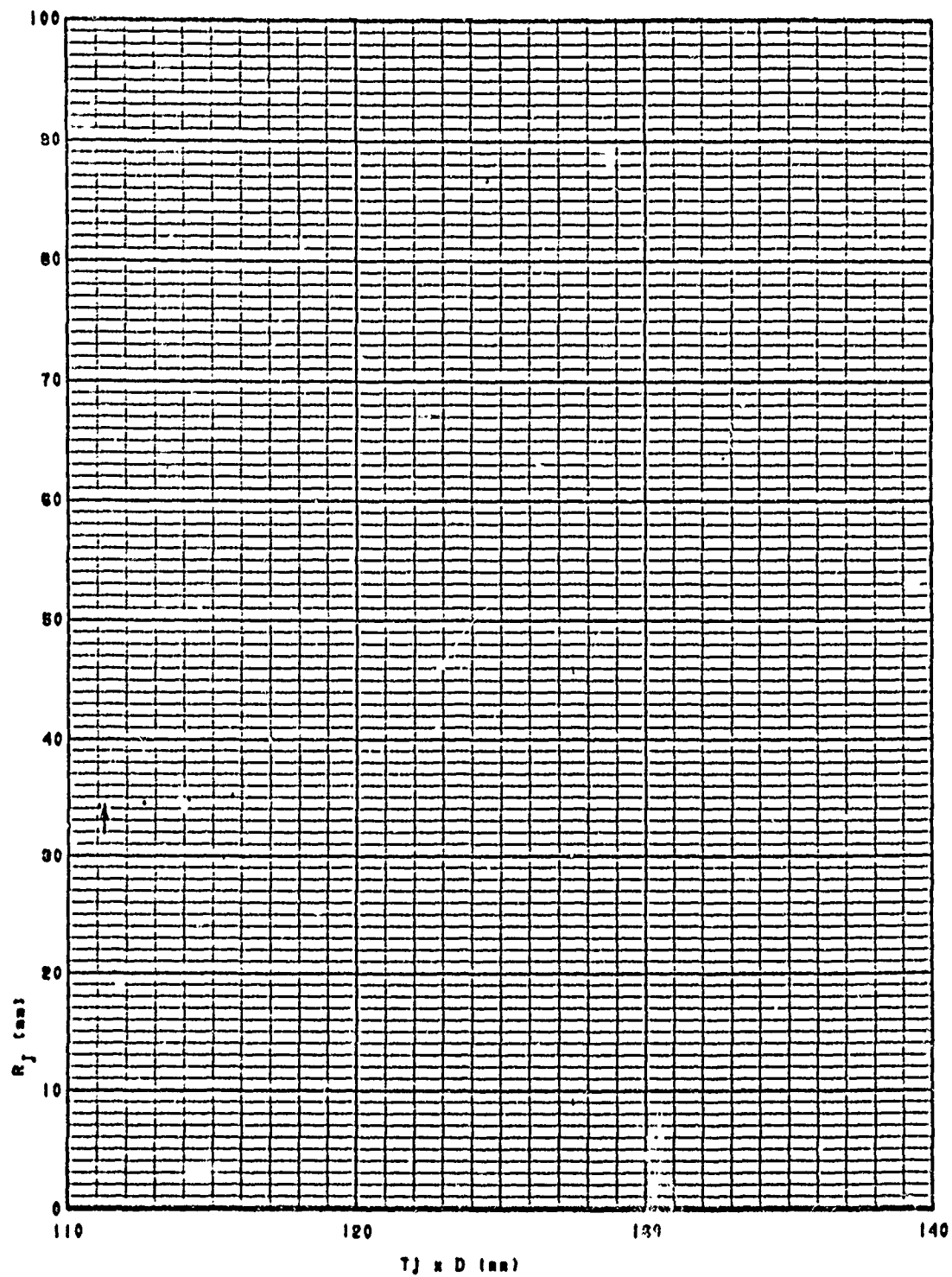
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1. ORIGINATING ACTIVITY (Corporate author) Naval Weapons Center China Lake, California 93555		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
		2b. GROUP	
3. REPORT TITLE CYLINDER EXPANSION (GURNEY CONSTANT) AND WARHEAD FRAGMENTATION PART 2. COMPUTERIZED DATA REDUCTION			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
5. AUTHOR(S) (First name, middle initial, last name) Richard A. Plauson and Charles T. Mitchell			
6. REPORT DATE October 1972		7a. TOTAL NO. OF PAGES 68	7b. NO. OF REFS
8a. CONTRACT OR GRANT NO		9a. ORIGINATOR'S REPORT NUMBER(S) NWC TP 5240, Part 2	
b. PROJECT NO AirTask A350 350D/216B/2, F17-353-501			
c.		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
d.			
10. DISTRIBUTION STATEMENT Distribution limited to U.S. government agencies only; test and evaluation; 20 September 1972. Other requests for this document must be referred to the Naval Weapons Center.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY Naval Air Systems Command Naval Material Command Washington, D.C. 60530	
13. ABSTRACT Development of a cylinder expansion test for use in assessing the metal acceleration capability of explosives is discussed in Part 1 of this report. A precisely manufactured metal cylinder is filled with explosive, and its wall expansion during detonation is observed with a streak camera. The photographic record of the cylinder expansion is analyzed by mechanized film reading and high speed computer techniques. The maximum velocity attained by the wall fragments is taken as a measure of the momentum imparted to the metal by the explosive. Both manual and automated methods of data reduction for attainment of test results are given. When standardized, this test procedure will permit the correlation of the evaluations of explosive compounds between laboratories. Part 2 of this report covers the computerized reduction of the pictorial data to tabular listings and graphic displays.			

KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Main line (CYLEX) Subroutines Tabulations Plots						

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